Rubi 4.16.0.4 Integration Test Results

on the problems in the test-suite directory "3 Logarithms"

Test results for the 193 problems in "3.1.2 (d x)^m (a+b log(c x^n))^p.m"

Test results for the 456 problems in "3.1.4 (f x)^m (d+e x^r)^q (a+b log(c x^n))^p.m"

Problem 4: Result valid but suboptimal antiderivative.

$$\int (d+e x) \left(a+b \operatorname{Log}\left[c x^n\right]\right) \, dx$$

Optimal (type 3, 48 leaves, 2 steps):

$$-b d n x-\frac{1}{4} b e n x^2+d x \left(a+b \operatorname{Log}\left[c x^n\right]\right)+\frac{1}{2} e x^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 41 leaves, 2 steps):

$$-b d n x-\frac{1}{4} b e n x^2+\frac{1}{2} \left(2 d x+e x^2\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 6: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x) \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^2} \, dx$$

Optimal (type 3, 48 leaves, 4 steps):

$$-\frac{b d n}{x}-\frac{d \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x}+\frac{e \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 b n}$$

Result (type 3, 43 leaves, 4 steps):

$$-\frac{b d n}{x}-\frac{1}{2} b e n \operatorname{Log}[x]^2-\left(\frac{d}{x}-e \operatorname{Log}[x]\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 8: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e\,x)\,(a+b\,\mathrm{Log}[c\,x^n])}{x^4}\,dx$$

Optimal (type 3, 57 leaves, 4 steps):

$$-\frac{b\,d\,n}{9\,x^3}-\frac{b\,e\,n}{4\,x^2}-\frac{d\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,x^3}-\frac{e\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,x^2}$$

Result (type 3, 48 leaves, 4 steps):

$$-\frac{b\,d\,n}{9\,x^3}-\frac{b\,e\,n}{4\,x^2}-\frac{1}{6}\left(\frac{2\,d}{x^3}+\frac{3\,e}{x^2}\right)\,(a+b\,\mathrm{Log}[c\,x^n])$$

Problem 13: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e\,x)^2\,(a+b\,\mathrm{Log}[c\,x^n])}{x}\,dx$$

Optimal (type 3, 80 leaves, 3 steps):

$$-\frac{1}{4}\,b\,n\,(4\,d+e\,x)^2-\frac{1}{2}\,b\,d^2\,n\,\mathrm{Log}[x]^2+2\,d\,e\,x\,(a+b\,\mathrm{Log}[c\,x^n])+\frac{1}{2}\,e^2\,x^2\,(a+b\,\mathrm{Log}[c\,x^n])+d^2\,\mathrm{Log}[x]\,(a+b\,\mathrm{Log}[c\,x^n])$$

Result (type 3, 63 leaves, 3 steps):

$$-\frac{1}{4}\,b\,n\,(4\,d+e\,x)^2-\frac{1}{2}\,b\,d^2\,n\,\mathrm{Log}[x]^2+\frac{1}{2}\,(4\,d\,e\,x+e^2\,x^2+2\,d^2\,\mathrm{Log}[x])\,(a+b\,\mathrm{Log}[c\,x^n])$$

Problem 14: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e\,x)^2\,(a+b\,\mathrm{Log}[c\,x^n])}{x^2}\,dx$$

Optimal (type 3, 78 leaves, 3 steps):

$$-\frac{b\,d^2\,n}{x}-b\,e^2\,n\,x-b\,d\,e\,n\,\mathrm{Log}[x]^2-\frac{d^2\,(a+b\,\mathrm{Log}[c\,x^n])}{x}+e^2\,x\,(a+b\,\mathrm{Log}[c\,x^n])+2\,d\,e\,\mathrm{Log}[x]\,(a+b\,\mathrm{Log}[c\,x^n])$$

Result (type 3, 61 leaves, 3 steps):

$$-\frac{b\,d^2\,n}{x}-b\,e^2\,n\,x-b\,d\,e\,n\,\mathrm{Log}[x]^2-\left(\frac{d^2}{x}-e^2\,x-2\,d\,e\,\mathrm{Log}[x]\right)\,(a+b\,\mathrm{Log}[c\,x^n])$$

Problem 15: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e\,x)^2\,(a+b\,\mathrm{Log}[c\,x^n])}{x^3}\,dx$$

Optimal (type 3, 84 leaves, 6 steps):

$$-\frac{b\,n\,(d+4\,e\,x)^2}{4\,x^2}-\frac{1}{2}\,b\,e^2\,n\,\mathrm{Log}[x]^2-\frac{d^2\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,x^2}-\frac{2\,d\,e\,(a+b\,\mathrm{Log}[c\,x^n])}{x}+e^2\,\mathrm{Log}[x]\,(a+b\,\mathrm{Log}[c\,x^n])$$

Result (type 3, 67 leaves, 4 steps):

$$-\frac{b\,n\,(d+4\,e\,x)^2}{4\,x^2}-\frac{1}{2}\,b\,e^2\,n\,\mathrm{Log}[x]^2-\frac{1}{2}\left(\frac{d^2}{x^2}+\frac{4\,d\,e}{x}-2\,e^2\,\mathrm{Log}[x]\right)\,(a+b\,\mathrm{Log}[c\,x^n])$$

Problem 17: Result valid but suboptimal antiderivative.

$$\int\frac{(d+e\,x)^2\,(a+b\,\mathrm{Log}[c\,x^n])}{x^5}\,dx$$

Optimal (type 3, 95 leaves, 4 steps):

$$-\frac{b\,d^2\,n}{16\,x^4}-\frac{2\,b\,d\,e\,n}{9\,x^3}-\frac{b\,e^2\,n}{4\,x^2}-\frac{d^2\,(a+b\,\mathrm{Log}[c\,x^n])}{4\,x^4}-\frac{2\,d\,e\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,x^3}-\frac{e^2\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,x^2}$$

Result (type 3, 74 leaves, 4 steps):

$$-\frac{b\,d^2\,n}{16\,x^4}-\frac{2\,b\,d\,e\,n}{9\,x^3}-\frac{b\,e^2\,n}{4\,x^2}-\frac{1}{12}\left(\frac{3\,d^2}{x^4}+\frac{8\,d\,e}{x^3}+\frac{6\,e^2}{x^2}\right)\,(a+b\,\mathrm{Log}[c\,x^n])$$

Problem 18: Result valid but suboptimal antiderivative.

$$\int\frac{(d+e\,x)^2\,(a+b\,\mathrm{Log}[c\,x^n])}{x^6}\,dx$$

Optimal (type 3, 95 leaves, 4 steps):

$$-\frac{b\,d^2\,n}{25\,x^5}-\frac{b\,d\,e\,n}{8\,x^4}-\frac{b\,e^2\,n}{9\,x^3}-\frac{d^2\,(a+b\,\mathrm{Log}[c\,x^n])}{5\,x^5}-\frac{d\,e\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,x^4}-\frac{e^2\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,x^3}$$

Result (type 3, 74 leaves, 4 steps):

$$-\frac{b\,d^2\,n}{25\,x^5}-\frac{b\,d\,e\,n}{8\,x^4}-\frac{b\,e^2\,n}{9\,x^3}-\frac{1}{30}\left(\frac{6\,d^2}{x^5}+\frac{15\,d\,e}{x^4}+\frac{10\,e^2}{x^3}\right)\,(a+b\,\mathrm{Log}[c\,x^n])$$

Problem 23: Result valid but suboptimal antiderivative.

$$\int\frac{(d+e\,x)^3\,(a+b\,\mathrm{Log}[c\,x^n])}{x}\,dx$$

Optimal (type 3, 122 leaves, 4 steps):

$$-3\,b\,d^2\,e\,n\,x-\frac{3}{4}\,b\,d\,e^2\,n\,x^2-\frac{1}{9}\,b\,e^3\,n\,x^3-\frac{1}{2}\,b\,d^3\,n\,\text{Log}[x]^2+3\,d^2\,e\,x\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)+\frac{3}{2}\,d\,e^2\,x^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)+\frac{1}{3}\,e^3\,x^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)+d^3\,\text{Log}[x]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Result (type 3, 94 leaves, 4 steps):

$$-3\,b\,d^2\,e\,n\,x-\frac{3}{4}\,b\,d\,e^2\,n\,x^2-\frac{1}{9}\,b\,e^3\,n\,x^3-\frac{1}{2}\,b\,d^3\,n\,\text{Log}[x]^2+\frac{1}{6}\left(18\,d^2\,e\,x+9\,d\,e^2\,x^2+2\,e^3\,x^3+6\,d^3\,\text{Log}[x]\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 24: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e\,x)^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^2}\,dx$$

Optimal (type 3, 119 leaves, 3 steps):

$$-\frac{b\,d^3\,n}{x}-3\,b\,d\,e^2\,n\,x-\frac{1}{4}\,b\,e^3\,n\,x^2-\frac{3}{2}\,b\,d^2\,e\,n\,\text{Log}[x]^2-\frac{d^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x}+3\,d\,e^2\,x\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)+\frac{1}{2}\,e^3\,x^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)+3\,d^2\,e\,\text{Log}[x]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Result (type 3, 92 leaves, 3 steps):

$$-\frac{b\,d^3\,n}{x}-3\,b\,d\,e^2\,n\,x-\frac{1}{4}\,b\,e^3\,n\,x^2-\frac{3}{2}\,b\,d^2\,e\,n\,\text{Log}[x]^2-\frac{1}{2}\left(\frac{2\,d^3}{x}-6\,d\,e^2\,x-e^3\,x^2-6\,d^2\,e\,\text{Log}[x]\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 25: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e\,x)^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^3}\,dx$$

Optimal (type 3, 118 leaves, 3 steps):

$$-\frac{b\,d^3\,n}{4\,x^2}-\frac{3\,b\,d^2\,e\,n}{x}-b\,e^3\,n\,x-\frac{3}{2}\,b\,d\,e^2\,n\,\text{Log}[x]^2-\frac{d^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2\,x^2}-\frac{3\,d^2\,e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x}+e^3\,x\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)+3\,d\,e^2\,\text{Log}[x]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Result (type 3, 91 leaves, 3 steps):

$$-\frac{b\,d^3\,n}{4\,x^2}-\frac{3\,b\,d^2\,e\,n}{x}-b\,e^3\,n\,x-\frac{3}{2}\,b\,d\,e^2\,n\,\text{Log}[x]^2-\frac{1}{2}\left(\frac{d^3}{x^2}+\frac{6\,d^2\,e}{x}-2\,e^3\,x-6\,d\,e^2\,\text{Log}[x]\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 26: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x)^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^4} \, dx$$

Optimal (type 3, 126 leaves, 7 steps):

$$-\frac{b d^3 n}{9 x^3}-\frac{3 b d^2 e n}{4 x^2}-\frac{3 b d e^2 n}{x}-\frac{1}{2} b e^3 n \operatorname{Log}[x]^2-\frac{d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 x^3}-\frac{3 d^2 e \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{2 x^2}-\frac{3 d e^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x}+e^3 \operatorname{Log}[x] \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 98 leaves, 5 steps):

$$-\frac{b d^3 n}{9 x^3}-\frac{3 b d^2 e n}{4 x^2}-\frac{3 b d e^2 n}{x}-\frac{1}{2} b e^3 n \operatorname{Log}[x]^2-\frac{1}{6} \left(\frac{2 d^3}{x^3}+\frac{9 d^2 e}{x^2}+\frac{18 d e^2}{x}-6 e^3 \operatorname{Log}[x]\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 29: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x)^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^7} \, dx$$

Optimal (type 3, 133 leaves, 4 steps):

$$-\frac{b d^3 n}{36 x^6}-\frac{3 b d^2 e n}{25 x^5}-\frac{3 b d e^2 n}{16 x^4}-\frac{b e^3 n}{9 x^3}-\frac{d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{6 x^6}-\frac{3 d^2 e \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{5 x^5}-\frac{3 d e^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{4 x^4}-\frac{e^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 x^3}$$

Result (type 3, 100 leaves, 4 steps):

$$-\frac{b d^3 n}{36 x^6}-\frac{3 b d^2 e n}{25 x^5}-\frac{3 b d e^2 n}{16 x^4}-\frac{b e^3 n}{9 x^3}-\frac{1}{60} \left(\frac{10 d^3}{x^6}+\frac{36 d^2 e}{x^5}+\frac{45 d e^2}{x^4}+\frac{20 e^3}{x^3}\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 30: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x)^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^8} \, dx$$

Optimal (type 3, 133 leaves, 4 steps):

$$-\frac{b d^3 n}{49 x^7}-\frac{b d^2 e n}{12 x^6}-\frac{3 b d e^2 n}{25 x^5}-\frac{b e^3 n}{16 x^4}-\frac{d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{7 x^7}-\frac{d^2 e \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{2 x^6}-\frac{3 d e^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{5 x^5}-\frac{e^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{4 x^4}$$

Result (type 3, 100 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{49\,x^7}-\frac{b\,d^2\,e\,n}{12\,x^6}-\frac{3\,b\,d\,e^2\,n}{25\,x^5}-\frac{b\,e^3\,n}{16\,x^4}-\frac{1}{140}\left(\frac{20\,d^3}{x^7}+\frac{70\,d^2\,e}{x^6}+\frac{84\,d\,e^2}{x^5}+\frac{35\,e^3}{x^4}\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 35: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\text{Log}\left[c\,x^n\right]}{x\,(d+e\,x)}\,dx$$

Optimal (type 4, 44 leaves, 2 steps):

$$-\frac{\text{Log}\left[1+\frac{d}{e\,x}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{d}+\frac{b\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d}$$

Result (type 4, 66 leaves, 4 steps):

$$\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{2\,b\,d\,n}-\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d}-\frac{b\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d}$$

Problem 36: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\text{Log}\left[c\,x^n\right]}{x^2\,(d+e\,x)}\,dx$$

Optimal (type 4, 74 leaves, 4 steps):

$$-\frac{b\,n}{d\,x}-\frac{a+b\,\text{Log}\left[c\,x^n\right]}{d\,x}+\frac{e\,\text{Log}\left[1+\frac{d}{e\,x}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{d^2}-\frac{b\,e\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d^2}$$

Result (type 4, 95 leaves, 6 steps):

$$-\frac{b\,n}{d\,x}-\frac{a+b\,\text{Log}\left[c\,x^n\right]}{d\,x}-\frac{e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{2\,b\,d^2\,n}+\frac{e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^2}+\frac{b\,e\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^2}$$

Problem 37: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\text{Log}\left[c\,x^n\right]}{x^3\,(d+e\,x)}\,dx$$

Optimal (type 4, 110 leaves, 6 steps):

$$-\frac{b\,n}{4\,d\,x^2}+\frac{b\,e\,n}{d^2\,x}-\frac{a+b\,\text{Log}\left[c\,x^n\right]}{2\,d\,x^2}+\frac{e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{d^2\,x}-\frac{e^2\,\text{Log}\left[1+\frac{d}{e\,x}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{d^3}+\frac{b\,e^2\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d^3}$$

Result (type 4, 135 leaves, 7 steps):

$$-\frac{b\,n}{4\,d\,x^2}+\frac{b\,e\,n}{d^2\,x}-\frac{a+b\,\text{Log}[c\,x^n]}{2\,d\,x^2}+\frac{e\,(a+b\,\text{Log}[c\,x^n])}{d^2\,x}+\frac{e^2\,(a+b\,\text{Log}[c\,x^n])^2}{2\,b\,d^3\,n}-\frac{e^2\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^3}-\frac{b\,e^2\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}$$

Problem 38: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\text{Log}[c\,x^n]}{x^4\,(d+e\,x)}\,dx$$

Optimal (type 4, 150 leaves, 8 steps):

$$-\frac{b\,n}{9\,d\,x^3}+\frac{b\,e\,n}{4\,d^2\,x^2}-\frac{b\,e^2\,n}{d^3\,x}-\frac{a+b\,\text{Log}[c\,x^n]}{3\,d\,x^3}+\frac{e\,(a+b\,\text{Log}[c\,x^n])}{2\,d^2\,x^2}-\frac{e^2\,(a+b\,\text{Log}[c\,x^n])}{d^3\,x}+\frac{e^3\,\text{Log}\left[1+\frac{d}{e\,x}\right]\,(a+b\,\text{Log}[c\,x^n])}{d^4}-\frac{b\,e^3\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d^4}$$

Result (type 4, 173 leaves, 8 steps):

$$-\frac{b\,n}{9\,d\,x^3}+\frac{b\,e\,n}{4\,d^2\,x^2}-\frac{b\,e^2\,n}{d^3\,x}-\frac{a+b\,\text{Log}[c\,x^n]}{3\,d\,x^3}+\frac{e\,(a+b\,\text{Log}[c\,x^n])}{2\,d^2\,x^2}-\frac{e^2\,(a+b\,\text{Log}[c\,x^n])}{d^3\,x}-\frac{e^3\,(a+b\,\text{Log}[c\,x^n])^2}{2\,b\,d^4\,n}+\frac{e^3\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^4}+\frac{b\,e^3\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^4}$$

Problem 39: Result valid but suboptimal antiderivative.

$$\int\frac{x^3\,(a+b\,\text{Log}[c\,x^n])}{(d+e\,x)^2}\,dx$$

Optimal (type 4, 152 leaves, 8 steps):

$$\frac{3\,b\,d\,n\,x}{e^3}-\frac{d\,(3\,a+b\,n)\,x}{e^3}-\frac{3\,b\,n\,x^2}{4\,e^2}-\frac{3\,b\,d\,x\,\text{Log}[c\,x^n]}{e^3}-\frac{x^3\,(a+b\,\text{Log}[c\,x^n])}{e\,(d+e\,x)}+\frac{x^2\,(3\,a+b\,n+3\,b\,\text{Log}[c\,x^n])}{2\,e^2}+\frac{d^2\,(3\,a+b\,n+3\,b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{e^4}+\frac{3\,b\,d^2\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^4}$$

Result (type 4, 151 leaves, 9 steps):

$$-\frac{2\,a\,d\,x}{e^3}+\frac{2\,b\,d\,n\,x}{e^3}-\frac{b\,n\,x^2}{4\,e^2}-\frac{2\,b\,d\,x\,\text{Log}[c\,x^n]}{e^3}+\frac{x^2\,(a+b\,\text{Log}[c\,x^n])}{2\,e^2}-\frac{d^2\,x\,(a+b\,\text{Log}[c\,x^n])}{e^3\,(d+e\,x)}+\frac{b\,d^2\,n\,\text{Log}[d+e\,x]}{e^4}+\frac{3\,d^2\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{e^4}+\frac{3\,b\,d^2\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^4}$$

Problem 40: Result valid but suboptimal antiderivative.

$$\int \frac{x^2 \left(a + b \, \text{Log}[c \, x^n]\right)}{(d + e \, x)^2} \, dx$$

Optimal (type 4, 98 leaves, 7 steps):

$$-\frac{b \, n \, x}{e^2} + \frac{2 \, x \left(a + b \, \text{Log}[c \, x^n]\right)}{e^2} - \frac{x^2 \left(a + b \, \text{Log}[c \, x^n]\right)}{e \, (d + e \, x)} - \frac{d \left(2 \, a + b \, n + 2 \, b \, \text{Log}[c \, x^n]\right) \text{Log}\left[1 + \frac{e \, x}{d}\right]}{e^3} - \frac{2 \, b \, d \, n \, \text{PolyLog}\left[2, -\frac{e \, x}{d}\right]}{e^3}$$

Result (type 4, 106 leaves, 8 steps):

$$\frac{a \, x}{e^2} - \frac{b \, n \, x}{e^2} + \frac{b \, x \, \text{Log}[c \, x^n]}{e^2} + \frac{d \, x \left(a + b \, \text{Log}[c \, x^n]\right)}{e^2 \, (d + e \, x)} - \frac{b \, d \, n \, \text{Log}[d + e \, x]}{e^3} - \frac{2 \, d \left(a + b \, \text{Log}[c \, x^n]\right) \text{Log}\left[1 + \frac{e \, x}{d}\right]}{e^3} - \frac{2 \, b \, d \, n \, \text{PolyLog}\left[2, -\frac{e \, x}{d}\right]}{e^3}$$

Problem 41: Result valid but suboptimal antiderivative.

$$\int \frac{x \left(a + b \, \text{Log}[c \, x^n]\right)}{(d + e \, x)^2} \, dx$$

Optimal (type 4, 65 leaves, 3 steps):

$$-\frac{x \left(a + b \, \text{Log}[c \, x^n]\right)}{e \, (d + e \, x)} + \frac{\left(a + b \, n + b \, \text{Log}[c \, x^n]\right) \text{Log}\left[1 + \frac{e \, x}{d}\right]}{e^2} + \frac{b \, n \, \text{PolyLog}\left[2, -\frac{e \, x}{d}\right]}{e^2}$$

Result (type 4, 74 leaves, 6 steps):

$$-\frac{x \left(a + b \, \text{Log}[c \, x^n]\right)}{e \, (d + e \, x)} + \frac{b \, n \, \text{Log}[d + e \, x]}{e^2} + \frac{\left(a + b \, \text{Log}[c \, x^n]\right) \text{Log}\left[1 + \frac{e \, x}{d}\right]}{e^2} + \frac{b \, n \, \text{PolyLog}\left[2, -\frac{e \, x}{d}\right]}{e^2}$$

Problem 43: Result valid but suboptimal antiderivative.

$$\int \frac{a + b \, \text{Log}[c \, x^n]}{x \, (d + e \, x)^2} \, dx$$

Optimal (type 4, 80 leaves, 5 steps):

$$-\frac{e \, x \left(a + b \, \text{Log}[c \, x^n]\right)}{d^2 \, (d + e \, x)} - \frac{\text{Log}\left[1 + \frac{d}{e \, x}\right] \left(a + b \, \text{Log}[c \, x^n]\right)}{d^2} + \frac{b \, n \, \text{Log}[d + e \, x]}{d^2} + \frac{b \, n \, \text{PolyLog}\left[2, -\frac{d}{e \, x}\right]}{d^2}$$

Result (type 4, 102 leaves, 7 steps):

$$-\frac{e\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{d^2\,(d+e\,x)}+\frac{(a+b\,\mathrm{Log}[c\,x^n])^2}{2\,b\,d^2\,n}+\frac{b\,n\,\mathrm{Log}[d+e\,x]}{d^2}-\frac{(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{d^2}-\frac{b\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^2}$$

Problem 44: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\mathrm{Log}[c\,x^n]}{x^2\,(d+e\,x)^2}\,dx$$

Optimal (type 4, 114 leaves, 7 steps):

$$-\frac{b\,n}{d^2\,x}-\frac{a+b\,\mathrm{Log}[c\,x^n]}{d^2\,x}+\frac{e^2\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{d^3\,(d+e\,x)}+\frac{2\,e\,\mathrm{Log}\left[1+\frac{d}{e\,x}\right]\,(a+b\,\mathrm{Log}[c\,x^n])}{d^3}-\frac{b\,e\,n\,\mathrm{Log}[d+e\,x]}{d^3}-\frac{2\,b\,e\,n\,\mathrm{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d^3}$$

Result (type 4, 134 leaves, 8 steps):

$$-\frac{b\,n}{d^2\,x}-\frac{a+b\,\mathrm{Log}[c\,x^n]}{d^2\,x}+\frac{e^2\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{d^3\,(d+e\,x)}-\frac{e\,(a+b\,\mathrm{Log}[c\,x^n])^2}{b\,d^3\,n}-\frac{b\,e\,n\,\mathrm{Log}[d+e\,x]}{d^3}+\frac{2\,e\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{d^3}+\frac{2\,b\,e\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}$$

Problem 45: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\mathrm{Log}[c\,x^n]}{x^3\,(d+e\,x)^2}\,dx$$

Optimal (type 4, 154 leaves, 8 steps):

$$-\frac{b\,n}{4\,d^2\,x^2}+\frac{2\,b\,e\,n}{d^3\,x}-\frac{a+b\,\mathrm{Log}[c\,x^n]}{2\,d^2\,x^2}+\frac{2\,e\,(a+b\,\mathrm{Log}[c\,x^n])}{d^3\,x}-\frac{e^3\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{d^4\,(d+e\,x)}-\frac{3\,e^2\,\mathrm{Log}\left[1+\frac{d}{e\,x}\right]\,(a+b\,\mathrm{Log}[c\,x^n])}{d^4}+\frac{b\,e^2\,n\,\mathrm{Log}[d+e\,x]}{d^4}+\frac{3\,b\,e^2\,n\,\mathrm{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d^4}$$

Result (type 4, 178 leaves, 9 steps):

$$-\frac{b\,n}{4\,d^2\,x^2}+\frac{2\,b\,e\,n}{d^3\,x}-\frac{a+b\,\mathrm{Log}[c\,x^n]}{2\,d^2\,x^2}+\frac{2\,e\,(a+b\,\mathrm{Log}[c\,x^n])}{d^3\,x}-\frac{e^3\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{d^4\,(d+e\,x)}+\frac{3\,e^2\,(a+b\,\mathrm{Log}[c\,x^n])^2}{2\,b\,d^4\,n}+\frac{b\,e^2\,n\,\mathrm{Log}[d+e\,x]}{d^4}-\frac{3\,e^2\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{d^4}-\frac{3\,b\,e^2\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^4}$$

Problem 46: Result valid but suboptimal antiderivative.

$$\int \frac{x^3 \left(a + b \,\text{Log}[c\, x^n]\right)}{(d + e\, x)^3} \, dx$$

Optimal (type 4, 149 leaves, 8 steps):

$$-\frac{3\, b\, n\, x}{e^3} + \frac{(6\, a + 5\, b\, n)\, x}{2\, e^3} + \frac{3\, b\, x\, \text{Log}[c\, x^n]}{e^3} - \frac{x^3 \left(a + b\, \text{Log}[c\, x^n]\right)}{2\, e\, (d + e\, x)^2} - \frac{x^2 \left(3\, a + b\, n + 3\, b\, \text{Log}[c\, x^n]\right)}{2\, e^2\, (d + e\, x)} - \frac{d \left(6\, a + 5\, b\, n + 6\, b\, \text{Log}[c\, x^n]\right) \text{Log}\left[1 + \frac{e\, x}{d}\right]}{2\, e^4} - \frac{3\, b\, d\, n\, \text{PolyLog}\left[2, -\frac{e\, x}{d}\right]}{e^4}$$

Result (type 4, 167 leaves, 11 steps):

$$\frac{a\, x}{e^3} - \frac{b\, n\, x}{e^3} - \frac{b\, d^2\, n}{2\, e^4\, (d + e\, x)} - \frac{b\, d\, n\, \text{Log}[x]}{2\, e^4} + \frac{b\, x\, \text{Log}[c\, x^n]}{e^3} + \frac{d^3 \left(a + b\, \text{Log}[c\, x^n]\right)}{2\, e^4\, (d + e\, x)^2} + \frac{3\, d\, x \left(a + b\, \text{Log}[c\, x^n]\right)}{e^3\, (d + e\, x)} - \frac{5\, b\, d\, n\, \text{Log}[d + e\, x]}{2\, e^4} - \frac{3\, d \left(a + b\, \text{Log}[c\, x^n]\right) \text{Log}\left[1 + \frac{e\, x}{d}\right]}{e^4} - \frac{3\, b\, d\, n\, \text{PolyLog}\left[2, -\frac{e\, x}{d}\right]}{e^4}$$

Problem 47: Result valid but suboptimal antiderivative.

$$\int \frac{x^2 \left(a + b\, \text{Log}[c\, x^n]\right)}{(d + e\, x)^3} \, dx$$

Optimal (type 4, 107 leaves, 4 steps):

$$-\frac{x^2 \left(a + b\, \text{Log}[c\, x^n]\right)}{2\, e\, (d + e\, x)^2} - \frac{x \left(2\, a + b\, n + 2\, b\, \text{Log}[c\, x^n]\right)}{2\, e^2\, (d + e\, x)} + \frac{\left(2\, a + 3\, b\, n + 2\, b\, \text{Log}[c\, x^n]\right) \text{Log}\left[1 + \frac{e\, x}{d}\right]}{2\, e^3} + \frac{b\, n\, \text{PolyLog}\left[2, -\frac{e\, x}{d}\right]}{e^3}$$

Result (type 4, 132 leaves, 9 steps):

$$\frac{b\, d\, n}{2\, e^3\, (d + e\, x)} + \frac{b\, n\, \text{Log}[x]}{2\, e^3} - \frac{d^2 \left(a + b\, \text{Log}[c\, x^n]\right)}{2\, e^3\, (d + e\, x)^2} - \frac{2\, x \left(a + b\, \text{Log}[c\, x^n]\right)}{e^2\, (d + e\, x)} + \frac{3\, b\, n\, \text{Log}[d + e\, x]}{2\, e^3} + \frac{\left(a + b\, \text{Log}[c\, x^n]\right) \text{Log}\left[1 + \frac{e\, x}{d}\right]}{e^3} + \frac{b\, n\, \text{PolyLog}\left[2, -\frac{e\, x}{d}\right]}{e^3}$$

Problem 50: Result valid but suboptimal antiderivative.

$$\int \frac{a + b\, \text{Log}[c\, x^n]}{x\, (d + e\, x)^3} \, dx$$

Optimal (type 4, 134 leaves, 9 steps):

$$-\frac{b n}{2 d^2 (d+e x)}-\frac{b n \operatorname{Log}[x]}{2 d^3}+\frac{a+b \operatorname{Log}[c x^n]}{2 d (d+e x)^2}-\frac{e x (a+b \operatorname{Log}[c x^n])}{d^3 (d+e x)}-\frac{\operatorname{Log}\left[1+\frac{d}{e x}\right] (a+b \operatorname{Log}[c x^n])}{d^3}+\frac{3 b n \operatorname{Log}[d+e x]}{2 d^3}+\frac{b n \operatorname{PolyLog}\left[2,-\frac{d}{e x}\right]}{d^3}$$

Result (type 4, 156 leaves, 11 steps):

$$-\frac{b n}{2 d^2 (d+e x)}-\frac{b n \operatorname{Log}[x]}{2 d^3}+\frac{a+b \operatorname{Log}[c x^n]}{2 d (d+e x)^2}-\frac{e x (a+b \operatorname{Log}[c x^n])}{d^3 (d+e x)}+\frac{(a+b \operatorname{Log}[c x^n])^2}{2 b d^3 n}+\frac{3 b n \operatorname{Log}[d+e x]}{2 d^3}-\frac{(a+b \operatorname{Log}[c x^n]) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{d^3}-\frac{b n \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^3}$$

Problem 51: Result valid but suboptimal antiderivative.

$$\int \frac{a+b \operatorname{Log}[c x^n]}{x^2 (d+e x)^3} \, dx$$

Optimal (type 4, 171 leaves, 10 steps):

$$-\frac{b n}{d^3 x}+\frac{b e n}{2 d^3 (d+e x)}+\frac{b e n \operatorname{Log}[x]}{2 d^4}-\frac{a+b \operatorname{Log}[c x^n]}{d^3 x}-\frac{e (a+b \operatorname{Log}[c x^n])}{2 d^2 (d+e x)^2}+\frac{2 e^2 x (a+b \operatorname{Log}[c x^n])}{d^4 (d+e x)}+\frac{3 e \operatorname{Log}\left[1+\frac{d}{e x}\right] (a+b \operatorname{Log}[c x^n])}{d^4}-\frac{5 b e n \operatorname{Log}[d+e x]}{2 d^4}-\frac{3 b e n \operatorname{PolyLog}\left[2,-\frac{d}{e x}\right]}{d^4}$$

Result (type 4, 193 leaves, 11 steps):

$$-\frac{b n}{d^3 x}+\frac{b e n}{2 d^3 (d+e x)}+\frac{b e n \operatorname{Log}[x]}{2 d^4}-\frac{a+b \operatorname{Log}[c x^n]}{d^3 x}-\frac{e (a+b \operatorname{Log}[c x^n])}{2 d^2 (d+e x)^2}+\frac{2 e^2 x (a+b \operatorname{Log}[c x^n])}{d^4 (d+e x)}-\frac{3 e (a+b \operatorname{Log}[c x^n])^2}{2 b d^4 n}-\frac{5 b e n \operatorname{Log}[d+e x]}{2 d^4}+\frac{3 e (a+b \operatorname{Log}[c x^n]) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{d^4}+\frac{3 b e n \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^4}$$

Problem 52: Result valid but suboptimal antiderivative.

$$\int \frac{a+b \operatorname{Log}[c x^n]}{x^3 (d+e x)^3} \, dx$$

Optimal (type 4, 217 leaves, 11 steps):

$$-\frac{b\,n}{4\,d^3\,x^2}+\frac{3\,b\,e\,n}{d^4\,x}-\frac{b\,e^2\,n}{2\,d^4\,(d+e\,x)}-\frac{b\,e^2\,n\,\mathrm{Log}[x]}{2\,d^5}-\frac{a+b\,\mathrm{Log}[c\,x^n]}{2\,d^3\,x^2}+\frac{3\,e\,(a+b\,\mathrm{Log}[c\,x^n])}{d^4\,x}+\frac{e^2\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,d^3\,(d+e\,x)^2}-\frac{3\,e^3\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{d^5\,(d+e\,x)}-\frac{6\,e^2\,\mathrm{Log}\left[1+\frac{d}{e\,x}\right]\,(a+b\,\mathrm{Log}[c\,x^n])}{d^5}+\frac{7\,b\,e^2\,n\,\mathrm{Log}[d+e\,x]}{2\,d^5}+\frac{6\,b\,e^2\,n\,\mathrm{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d^5}$$

Result (type 4, 239 leaves, 12 steps):

$$-\frac{b\,n}{4\,d^3\,x^2}+\frac{3\,b\,e\,n}{d^4\,x}-\frac{b\,e^2\,n}{2\,d^4\,(d+e\,x)}-\frac{b\,e^2\,n\,\mathrm{Log}[x]}{2\,d^5}-\frac{a+b\,\mathrm{Log}[c\,x^n]}{2\,d^3\,x^2}+\frac{3\,e\,(a+b\,\mathrm{Log}[c\,x^n])}{d^4\,x}+\frac{e^2\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,d^3\,(d+e\,x)^2}-\frac{3\,e^3\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{d^5\,(d+e\,x)}+\frac{3\,e^2\,(a+b\,\mathrm{Log}[c\,x^n])^2}{b\,d^5\,n}+\frac{7\,b\,e^2\,n\,\mathrm{Log}[d+e\,x]}{2\,d^5}-\frac{6\,e^2\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{d^5}-\frac{6\,b\,e^2\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^5}$$

Problem 53: Result valid but suboptimal antiderivative.

$$\int\frac{x^5\,(a+b\,\mathrm{Log}[c\,x^n])}{(d+e\,x)^4}\,dx$$

Optimal (type 4, 229 leaves, 10 steps):

$$\frac{10\,b\,d\,n\,x}{e^5}-\frac{d\,(60\,a+47\,b\,n)\,x}{6\,e^5}-\frac{5\,b\,n\,x^2}{2\,e^4}-\frac{10\,b\,d\,x\,\mathrm{Log}[c\,x^n]}{e^5}-\frac{x^5\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,e\,(d+e\,x)^3}-\frac{x^4\,(5\,a+b\,n+5\,b\,\mathrm{Log}[c\,x^n])}{6\,e^2\,(d+e\,x)^2}-\frac{x^3\,(20\,a+9\,b\,n+20\,b\,\mathrm{Log}[c\,x^n])}{6\,e^3\,(d+e\,x)}+\frac{x^2\,(60\,a+47\,b\,n+60\,b\,\mathrm{Log}[c\,x^n])}{12\,e^4}+\frac{d^2\,(60\,a+47\,b\,n+60\,b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{6\,e^6}+\frac{10\,b\,d^2\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^6}$$

Result (type 4, 260 leaves, 15 steps):

$$-\frac{4\,a\,d\,x}{e^5}+\frac{4\,b\,d\,n\,x}{e^5}-\frac{b\,n\,x^2}{4\,e^4}-\frac{b\,d^4\,n}{6\,e^6\,(d+e\,x)^2}+\frac{13\,b\,d^3\,n}{6\,e^6\,(d+e\,x)}+\frac{13\,b\,d^2\,n\,\mathrm{Log}[x]}{6\,e^6}-\frac{4\,b\,d\,x\,\mathrm{Log}[c\,x^n]}{e^5}+\frac{x^2\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,e^4}+\frac{d^5\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,e^6\,(d+e\,x)^3}-\frac{5\,d^4\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,e^6\,(d+e\,x)^2}-\frac{10\,d^2\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{e^5\,(d+e\,x)}+\frac{47\,b\,d^2\,n\,\mathrm{Log}[d+e\,x]}{6\,e^6}+\frac{10\,d^2\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{e^6}+\frac{10\,b\,d^2\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^6}$$

Problem 54: Result valid but suboptimal antiderivative.

$$\int\frac{x^4\,(a+b\,\mathrm{Log}[c\,x^n])}{(d+e\,x)^4}\,dx$$

Optimal (type 4, 183 leaves, 9 steps):

$$-\frac{4\,b\,n\,x}{e^4}+\frac{(12\,a+13\,b\,n)\,x}{3\,e^4}+\frac{4\,b\,x\,\mathrm{Log}[c\,x^n]}{e^4}-\frac{x^4\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,e\,(d+e\,x)^3}-\frac{x^3\,(4\,a+b\,n+4\,b\,\mathrm{Log}[c\,x^n])}{6\,e^2\,(d+e\,x)^2}-\frac{x^2\,(12\,a+7\,b\,n+12\,b\,\mathrm{Log}[c\,x^n])}{6\,e^3\,(d+e\,x)}-\frac{d\,(12\,a+13\,b\,n+12\,b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{3\,e^5}-\frac{4\,b\,d\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^5}$$

Result (type 4, 211 leaves, 14 steps):

$$\frac{a\,x}{e^4}-\frac{b\,n\,x}{e^4}+\frac{b\,d^3\,n}{6\,e^5\,(d+e\,x)^2}-\frac{5\,b\,d^2\,n}{3\,e^5\,(d+e\,x)}-\frac{5\,b\,d\,n\,\mathrm{Log}[x]}{3\,e^5}+\frac{b\,x\,\mathrm{Log}[c\,x^n]}{e^4}-\frac{d^4\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,e^5\,(d+e\,x)^3}+\frac{2\,d^3\,(a+b\,\mathrm{Log}[c\,x^n])}{e^5\,(d+e\,x)^2}+\frac{6\,d\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{e^4\,(d+e\,x)}-\frac{13\,b\,d\,n\,\mathrm{Log}[d+e\,x]}{3\,e^5}-\frac{4\,d\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{e^5}-\frac{4\,b\,d\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^5}$$

Problem 55: Result valid but suboptimal antiderivative.

$$\int\frac{x^3\,(a+b\,\mathrm{Log}[c\,x^n])}{(d+e\,x)^4}\,dx$$

Optimal (type 4, 141 leaves, 5 steps):

$$-\frac{x^3\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,e\,(d+e\,x)^3}-\frac{x^2\,(3\,a+b\,n+3\,b\,\mathrm{Log}[c\,x^n])}{6\,e^2\,(d+e\,x)^2}-\frac{x\,(6\,a+5\,b\,n+6\,b\,\mathrm{Log}[c\,x^n])}{6\,e^3\,(d+e\,x)}+\frac{(6\,a+11\,b\,n+6\,b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{6\,e^4}+\frac{b\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^4}$$

Result (type 4, 178 leaves, 12 steps):

$$-\frac{b\,d^2\,n}{6\,e^4\,(d+e\,x)^2}+\frac{7\,b\,d\,n}{6\,e^4\,(d+e\,x)}+\frac{7\,b\,n\,\mathrm{Log}[x]}{6\,e^4}+\frac{d^3\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,e^4\,(d+e\,x)^3}-\frac{3\,d^2\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,e^4\,(d+e\,x)^2}-\frac{3\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{e^3\,(d+e\,x)}+\frac{11\,b\,n\,\mathrm{Log}[d+e\,x]}{6\,e^4}+\frac{(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{e^4}+\frac{b\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^4}$$

Problem 59: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\mathrm{Log}[c\,x^n]}{x\,(d+e\,x)^4}\,dx$$

Optimal (type 4, 174 leaves, 13 steps):

$$-\frac{b\,n}{6\,d^2\,(d+e\,x)^2}-\frac{5\,b\,n}{6\,d^3\,(d+e\,x)}-\frac{5\,b\,n\,\mathrm{Log}[x]}{6\,d^4}+\frac{a+b\,\mathrm{Log}[c\,x^n]}{3\,d\,(d+e\,x)^3}+\frac{a+b\,\mathrm{Log}[c\,x^n]}{2\,d^2\,(d+e\,x)^2}-\frac{e\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{d^4\,(d+e\,x)}-\frac{\mathrm{Log}\left[1+\frac{d}{e\,x}\right]\,(a+b\,\mathrm{Log}[c\,x^n])}{d^4}+\frac{11\,b\,n\,\mathrm{Log}[d+e\,x]}{6\,d^4}+\frac{b\,n\,\mathrm{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d^4}$$

Result (type 4, 196 leaves, 15 steps):

$$-\frac{b\,n}{6\,d^2\,(d+e\,x)^2}-\frac{5\,b\,n}{6\,d^3\,(d+e\,x)}-\frac{5\,b\,n\,\mathrm{Log}[x]}{6\,d^4}+\frac{a+b\,\mathrm{Log}[c\,x^n]}{3\,d\,(d+e\,x)^3}+\frac{a+b\,\mathrm{Log}[c\,x^n]}{2\,d^2\,(d+e\,x)^2}-\frac{e\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{d^4\,(d+e\,x)}+\frac{(a+b\,\mathrm{Log}[c\,x^n])^2}{2\,b\,d^4\,n}+\frac{11\,b\,n\,\mathrm{Log}[d+e\,x]}{6\,d^4}-\frac{(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{d^4}-\frac{b\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^4}$$

Problem 60: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\mathrm{Log}[c\,x^n]}{x^2\,(d+e\,x)^4}\,dx$$

Optimal (type 4, 211 leaves, 13 steps):

$$-\frac{b\,n}{d^4\,x}+\frac{b\,e\,n}{6\,d^3\,(d+e\,x)^2}+\frac{4\,b\,e\,n}{3\,d^4\,(d+e\,x)}+\frac{4\,b\,e\,n\,\mathrm{Log}[x]}{3\,d^5}-\frac{a+b\,\mathrm{Log}[c\,x^n]}{d^4\,x}-\frac{e\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,d^2\,(d+e\,x)^3}-\frac{e\,(a+b\,\mathrm{Log}[c\,x^n])}{d^3\,(d+e\,x)^2}+\frac{3\,e^2\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{d^5\,(d+e\,x)}+\frac{4\,e\,\mathrm{Log}\left[1+\frac{d}{e\,x}\right]\,(a+b\,\mathrm{Log}[c\,x^n])}{d^5}-\frac{13\,b\,e\,n\,\mathrm{Log}[d+e\,x]}{3\,d^5}-\frac{4\,b\,e\,n\,\mathrm{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d^5}$$

Result (type 4, 231 leaves, 14 steps):

$$-\frac{b\,n}{d^4\,x}+\frac{b\,e\,n}{6\,d^3\,(d+e\,x)^2}+\frac{4\,b\,e\,n}{3\,d^4\,(d+e\,x)}+\frac{4\,b\,e\,n\,\mathrm{Log}[x]}{3\,d^5}-\frac{a+b\,\mathrm{Log}[c\,x^n]}{d^4\,x}-\frac{e\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,d^2\,(d+e\,x)^3}-\frac{e\,(a+b\,\mathrm{Log}[c\,x^n])}{d^3\,(d+e\,x)^2}+\frac{3\,e^2\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{d^5\,(d+e\,x)}-\frac{2\,e\,(a+b\,\mathrm{Log}[c\,x^n])^2}{b\,d^5\,n}-\frac{13\,b\,e\,n\,\mathrm{Log}[d+e\,x]}{3\,d^5}+\frac{4\,e\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{d^5}+\frac{4\,b\,e\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^5}$$

Problem 61: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\mathrm{Log}[c\,x^n]}{x^3\,(d+e\,x)^4}\,dx$$

Optimal (type 4, 263 leaves, 14 steps):

$$-\frac{b n}{4 d^4 x^2}+\frac{4 b e n}{d^5 x}-\frac{b e^2 n}{6 d^4 (d+e x)^2}-\frac{11 b e^2 n}{6 d^5 (d+e x)}-\frac{11 b e^2 n \text{Log}[x]}{6 d^6}-\frac{a+b \text{Log}[c x^n]}{2 d^4 x^2}+\frac{4 e (a+b \text{Log}[c x^n])}{d^5 x}+\frac{e^2 (a+b \text{Log}[c x^n])}{3 d^3 (d+e x)^3}+\frac{3 e^2 (a+b \text{Log}[c x^n])}{2 d^4 (d+e x)^2}-\frac{6 e^3 x (a+b \text{Log}[c x^n])}{d^6 (d+e x)}-\frac{10 e^2 \text{Log}\left[1+\frac{d}{e x}\right] (a+b \text{Log}[c x^n])}{d^6}+\frac{47 b e^2 n \text{Log}[d+e x]}{6 d^6}+\frac{10 b e^2 n \text{PolyLog}\left[2,-\frac{d}{e x}\right]}{d^6}$$

Result (type 4, 285 leaves, 15 steps):

$$-\frac{b n}{4 d^4 x^2}+\frac{4 b e n}{d^5 x}-\frac{b e^2 n}{6 d^4 (d+e x)^2}-\frac{11 b e^2 n}{6 d^5 (d+e x)}-\frac{11 b e^2 n \text{Log}[x]}{6 d^6}-\frac{a+b \text{Log}[c x^n]}{2 d^4 x^2}+\frac{4 e (a+b \text{Log}[c x^n])}{d^5 x}+\frac{e^2 (a+b \text{Log}[c x^n])}{3 d^3 (d+e x)^3}+\frac{3 e^2 (a+b \text{Log}[c x^n])}{2 d^4 (d+e x)^2}-\frac{6 e^3 x (a+b \text{Log}[c x^n])}{d^6 (d+e x)}+\frac{5 e^2 (a+b \text{Log}[c x^n])^2}{b d^6 n}+\frac{47 b e^2 n \text{Log}[d+e x]}{6 d^6}-\frac{10 e^2 (a+b \text{Log}[c x^n]) \text{Log}\left[1+\frac{e x}{d}\right]}{d^6}-\frac{10 b e^2 n \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^6}$$

Problem 62: Result valid but suboptimal antiderivative.

$$\int \frac{x^8 (a+b \text{Log}[c x^n])}{(d+e x)^7} \, dx$$

Optimal (type 4, 329 leaves, 13 steps):

$$\frac{28 b d n x}{e^8}-\frac{d (280 a+341 b n) x}{10 e^8}-\frac{7 b n x^2}{e^7}-\frac{28 b d x \text{Log}[c x^n]}{e^8}-\frac{x^8 (a+b \text{Log}[c x^n])}{6 e (d+e x)^6}-\frac{x^7 (8 a+b n+8 b \text{Log}[c x^n])}{30 e^2 (d+e x)^5}-\frac{x^6 (56 a+15 b n+56 b \text{Log}[c x^n])}{120 e^3 (d+e x)^4}-\frac{x^5 (168 a+73 b n+168 b \text{Log}[c x^n])}{180 e^4 (d+e x)^3}+\frac{x^2 (280 a+341 b n+280 b \text{Log}[c x^n])}{20 e^7}-\frac{x^4 (840 a+533 b n+840 b \text{Log}[c x^n])}{360 e^5 (d+e x)^2}-\frac{x^3 (840 a+743 b n+840 b \text{Log}[c x^n])}{90 e^6 (d+e x)}+\frac{d^2 (280 a+341 b n+280 b \text{Log}[c x^n]) \text{Log}\left[1+\frac{e x}{d}\right]}{10 e^9}+\frac{28 b d^2 n \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{e^9}$$

Result (type 4, 394 leaves, 24 steps):

$$-\frac{7\,a\,d\,x}{e^8}+\frac{7\,b\,d\,n\,x}{e^8}-\frac{b\,n\,x^2}{4\,e^7}+\frac{b\,d^7\,n}{30\,e^9\,(d+e\,x)^5}-\frac{43\,b\,d^6\,n}{120\,e^9\,(d+e\,x)^4}+\frac{167\,b\,d^5\,n}{90\,e^9\,(d+e\,x)^3}-\frac{131\,b\,d^4\,n}{20\,e^9\,(d+e\,x)^2}+\frac{219\,b\,d^3\,n}{10\,e^9\,(d+e\,x)}+\frac{219\,b\,d^2\,n\,\mathrm{Log}[x]}{10\,e^9}-\frac{7\,b\,d\,x\,\mathrm{Log}[c\,x^n]}{e^8}+\frac{x^2\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,e^7}-\frac{d^8\,(a+b\,\mathrm{Log}[c\,x^n])}{6\,e^9\,(d+e\,x)^6}+\frac{8\,d^7\,(a+b\,\mathrm{Log}[c\,x^n])}{5\,e^9\,(d+e\,x)^5}-\frac{7\,d^6\,(a+b\,\mathrm{Log}[c\,x^n])}{e^9\,(d+e\,x)^4}+\frac{56\,d^5\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,e^9\,(d+e\,x)^3}-\frac{35\,d^4\,(a+b\,\mathrm{Log}[c\,x^n])}{e^9\,(d+e\,x)^2}-\frac{56\,d^2\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{e^8\,(d+e\,x)}+\frac{341\,b\,d^2\,n\,\mathrm{Log}[d+e\,x]}{10\,e^9}+\frac{28\,d^2\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{e^9}+\frac{28\,b\,d^2\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^9}$$

Problem 63: Result valid but suboptimal antiderivative.

$$\int\frac{x^7\,(a+b\,\mathrm{Log}[c\,x^n])}{(d+e\,x)^7}\,dx$$

Optimal (type 4, 285 leaves, 12 steps):

$$-\frac{7\,b\,n\,x}{e^7}+\frac{(140\,a+223\,b\,n)\,x}{20\,e^7}+\frac{7\,b\,x\,\mathrm{Log}[c\,x^n]}{e^7}-\frac{x^7\,(a+b\,\mathrm{Log}[c\,x^n])}{6\,e\,(d+e\,x)^6}-\frac{x^6\,(7\,a+b\,n+7\,b\,\mathrm{Log}[c\,x^n])}{30\,e^2\,(d+e\,x)^5}-\frac{x^5\,(42\,a+13\,b\,n+42\,b\,\mathrm{Log}[c\,x^n])}{120\,e^3\,(d+e\,x)^4}-\frac{x^2\,(140\,a+153\,b\,n+140\,b\,\mathrm{Log}[c\,x^n])}{40\,e^6\,(d+e\,x)}-\frac{x^4\,(210\,a+107\,b\,n+210\,b\,\mathrm{Log}[c\,x^n])}{360\,e^4\,(d+e\,x)^3}-\frac{x^3\,(420\,a+319\,b\,n+420\,b\,\mathrm{Log}[c\,x^n])}{360\,e^5\,(d+e\,x)^2}-\frac{d\,(140\,a+223\,b\,n+140\,b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{20\,e^8}-\frac{7\,b\,d\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^8}$$

Result (type 4, 351 leaves, 23 steps):

$$\frac{a\,x}{e^7}-\frac{b\,n\,x}{e^7}-\frac{b\,d^6\,n}{30\,e^8\,(d+e\,x)^5}+\frac{37\,b\,d^5\,n}{120\,e^8\,(d+e\,x)^4}-\frac{241\,b\,d^4\,n}{180\,e^8\,(d+e\,x)^3}+\frac{153\,b\,d^3\,n}{40\,e^8\,(d+e\,x)^2}-\frac{197\,b\,d^2\,n}{20\,e^8\,(d+e\,x)}-\frac{197\,b\,d\,n\,\mathrm{Log}[x]}{20\,e^8}+\frac{b\,x\,\mathrm{Log}[c\,x^n]}{e^7}+\frac{d^7\,(a+b\,\mathrm{Log}[c\,x^n])}{6\,e^8\,(d+e\,x)^6}-\frac{7\,d^6\,(a+b\,\mathrm{Log}[c\,x^n])}{5\,e^8\,(d+e\,x)^5}+\frac{21\,d^5\,(a+b\,\mathrm{Log}[c\,x^n])}{4\,e^8\,(d+e\,x)^4}-\frac{35\,d^4\,(a+b\,\mathrm{Log}[c\,x^n])}{3\,e^8\,(d+e\,x)^3}+\frac{35\,d^3\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,e^8\,(d+e\,x)^2}+\frac{21\,d\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{e^7\,(d+e\,x)}-\frac{223\,b\,d\,n\,\mathrm{Log}[d+e\,x]}{20\,e^8}-\frac{7\,d\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{e^8}-\frac{7\,b\,d\,n\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^8}$$

Problem 64: Result valid but suboptimal antiderivative.

$$\int \frac{x^6 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{(d+e x)^7} \, dx$$

Optimal (type 4, 243 leaves, 8 steps):

$$-\frac{x^6 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{6 e (d+e x)^6}-\frac{x^5 \left(6 a+b n+6 b \operatorname{Log}\left[c x^n\right]\right)}{30 e^2 (d+e x)^5}-\frac{x^2 \left(20 a+19 b n+20 b \operatorname{Log}\left[c x^n\right]\right)}{40 e^5 (d+e x)^2}-\frac{x \left(20 a+29 b n+20 b \operatorname{Log}\left[c x^n\right]\right)}{20 e^6 (d+e x)}-\frac{x^4 \left(30 a+11 b n+30 b \operatorname{Log}\left[c x^n\right]\right)}{120 e^3 (d+e x)^4}-\frac{x^3 \left(60 a+37 b n+60 b \operatorname{Log}\left[c x^n\right]\right)}{180 e^4 (d+e x)^3}+\frac{\left(20 a+49 b n+20 b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{20 e^7}+\frac{b n \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{e^7}$$

Result (type 4, 316 leaves, 21 steps):

$$\frac{b d^5 n}{30 e^7 (d+e x)^5}-\frac{31 b d^4 n}{120 e^7 (d+e x)^4}+\frac{163 b d^3 n}{180 e^7 (d+e x)^3}-\frac{79 b d^2 n}{40 e^7 (d+e x)^2}+\frac{71 b d n}{20 e^7 (d+e x)}+\frac{71 b n \operatorname{Log}[x]}{20 e^7}-\frac{d^6 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{6 e^7 (d+e x)^6}+\frac{6 d^5 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{5 e^7 (d+e x)^5}-\frac{15 d^4 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{4 e^7 (d+e x)^4}+\frac{20 d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 e^7 (d+e x)^3}-\frac{15 d^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{2 e^7 (d+e x)^2}-\frac{6 x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{e^6 (d+e x)}+\frac{49 b n \operatorname{Log}[d+e x]}{20 e^7}+\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{e^7}+\frac{b n \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{e^7}$$

Problem 71: Result valid but suboptimal antiderivative.

$$\int \frac{a+b \operatorname{Log}\left[c x^n\right]}{x (d+e x)^7} \, dx$$

Optimal (type 4, 294 leaves, 25 steps):

$$-\frac{b n}{30 d^2 (d+e x)^5}-\frac{11 b n}{120 d^3 (d+e x)^4}-\frac{37 b n}{180 d^4 (d+e x)^3}-\frac{19 b n}{40 d^5 (d+e x)^2}-\frac{29 b n}{20 d^6 (d+e x)}-\frac{29 b n \operatorname{Log}[x]}{20 d^7}+\frac{a+b \operatorname{Log}\left[c x^n\right]}{6 d (d+e x)^6}+\frac{a+b \operatorname{Log}\left[c x^n\right]}{5 d^2 (d+e x)^5}+\frac{a+b \operatorname{Log}\left[c x^n\right]}{4 d^3 (d+e x)^4}+\frac{a+b \operatorname{Log}\left[c x^n\right]}{3 d^4 (d+e x)^3}+\frac{a+b \operatorname{Log}\left[c x^n\right]}{2 d^5 (d+e x)^2}-\frac{e x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d^7 (d+e x)}-\frac{\operatorname{Log}\left[1+\frac{d}{e x}\right] \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d^7}+\frac{49 b n \operatorname{Log}[d+e x]}{20 d^7}+\frac{b n \operatorname{PolyLog}\left[2,-\frac{d}{e x}\right]}{d^7}$$

Result (type 4, 316 leaves, 27 steps):

$$-\frac{b\,n}{30\,d^2\,(d+e\,x)^5}-\frac{11\,b\,n}{120\,d^3\,(d+e\,x)^4}-\frac{37\,b\,n}{180\,d^4\,(d+e\,x)^3}-\frac{19\,b\,n}{40\,d^5\,(d+e\,x)^2}-\frac{29\,b\,n}{20\,d^6\,(d+e\,x)}-\frac{29\,b\,n\,\text{Log}[x]}{20\,d^7}+\frac{a+b\,\text{Log}[c\,x^n]}{6\,d\,(d+e\,x)^6}+\frac{a+b\,\text{Log}[c\,x^n]}{5\,d^2\,(d+e\,x)^5}+\frac{a+b\,\text{Log}[c\,x^n]}{4\,d^3\,(d+e\,x)^4}+\frac{a+b\,\text{Log}[c\,x^n]}{3\,d^4\,(d+e\,x)^3}+\frac{a+b\,\text{Log}[c\,x^n]}{2\,d^5\,(d+e\,x)^2}-\frac{e\,x\,(a+b\,\text{Log}[c\,x^n])}{d^7\,(d+e\,x)}+\frac{(a+b\,\text{Log}[c\,x^n])^2}{2\,b\,d^7\,n}+\frac{49\,b\,n\,\text{Log}[d+e\,x]}{20\,d^7}-\frac{(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^7}-\frac{b\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^7}$$

Problem 72: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\text{Log}[c\,x^n]}{x^2\,(d+e\,x)^7}\,dx$$

Optimal (type 4, 339 leaves, 22 steps):

$$-\frac{b\,n}{d^7\,x}+\frac{b\,e\,n}{30\,d^3\,(d+e\,x)^5}+\frac{17\,b\,e\,n}{120\,d^4\,(d+e\,x)^4}+\frac{79\,b\,e\,n}{180\,d^5\,(d+e\,x)^3}+\frac{53\,b\,e\,n}{40\,d^6\,(d+e\,x)^2}+\frac{103\,b\,e\,n}{20\,d^7\,(d+e\,x)}+\frac{103\,b\,e\,n\,\text{Log}[x]}{20\,d^8}-\frac{a+b\,\text{Log}[c\,x^n]}{d^7\,x}-\frac{e\,(a+b\,\text{Log}[c\,x^n])}{6\,d^2\,(d+e\,x)^6}-\frac{2\,e\,(a+b\,\text{Log}[c\,x^n])}{5\,d^3\,(d+e\,x)^5}-\frac{3\,e\,(a+b\,\text{Log}[c\,x^n])}{4\,d^4\,(d+e\,x)^4}-\frac{4\,e\,(a+b\,\text{Log}[c\,x^n])}{3\,d^5\,(d+e\,x)^3}-\frac{5\,e\,(a+b\,\text{Log}[c\,x^n])}{2\,d^6\,(d+e\,x)^2}+\frac{6\,e^2\,x\,(a+b\,\text{Log}[c\,x^n])}{d^8\,(d+e\,x)}+\frac{7\,e\,\text{Log}\left[1+\frac{d}{e\,x}\right]\,(a+b\,\text{Log}[c\,x^n])}{d^8}-\frac{223\,b\,e\,n\,\text{Log}[d+e\,x]}{20\,d^8}-\frac{7\,b\,e\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d^8}$$

Result (type 4, 361 leaves, 23 steps):

$$-\frac{b\,n}{d^7\,x}+\frac{b\,e\,n}{30\,d^3\,(d+e\,x)^5}+\frac{17\,b\,e\,n}{120\,d^4\,(d+e\,x)^4}+\frac{79\,b\,e\,n}{180\,d^5\,(d+e\,x)^3}+\frac{53\,b\,e\,n}{40\,d^6\,(d+e\,x)^2}+\frac{103\,b\,e\,n}{20\,d^7\,(d+e\,x)}+\frac{103\,b\,e\,n\,\text{Log}[x]}{20\,d^8}-\frac{a+b\,\text{Log}[c\,x^n]}{d^7\,x}-\frac{e\,(a+b\,\text{Log}[c\,x^n])}{6\,d^2\,(d+e\,x)^6}-\frac{2\,e\,(a+b\,\text{Log}[c\,x^n])}{5\,d^3\,(d+e\,x)^5}-\frac{3\,e\,(a+b\,\text{Log}[c\,x^n])}{4\,d^4\,(d+e\,x)^4}-\frac{4\,e\,(a+b\,\text{Log}[c\,x^n])}{3\,d^5\,(d+e\,x)^3}-\frac{5\,e\,(a+b\,\text{Log}[c\,x^n])}{2\,d^6\,(d+e\,x)^2}+\frac{6\,e^2\,x\,(a+b\,\text{Log}[c\,x^n])}{d^8\,(d+e\,x)}-\frac{7\,e\,(a+b\,\text{Log}[c\,x^n])^2}{2\,b\,d^8\,n}-\frac{223\,b\,e\,n\,\text{Log}[d+e\,x]}{20\,d^8}+\frac{7\,e\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^8}+\frac{7\,b\,e\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^8}$$

Problem 73: Result valid but suboptimal antiderivative.

$$\int \frac{a+b\,\text{Log}[c\,x^n]}{x^3\,(d+e\,x)^7}\,dx$$

Optimal (type 4, 401 leaves, 23 steps):

$$-\frac{b\,n}{4\,d^7\,x^2}+\frac{7\,b\,e\,n}{d^8\,x}-\frac{b\,e^2\,n}{30\,d^4\,(d+e\,x)^5}-\frac{23\,b\,e^2\,n}{120\,d^5\,(d+e\,x)^4}-\frac{34\,b\,e^2\,n}{45\,d^6\,(d+e\,x)^3}-\frac{14\,b\,e^2\,n}{5\,d^7\,(d+e\,x)^2}-\frac{131\,b\,e^2\,n}{10\,d^8\,(d+e\,x)}-\frac{131\,b\,e^2\,n\,\text{Log}[x]}{10\,d^9}-\frac{a+b\,\text{Log}[c\,x^n]}{2\,d^7\,x^2}+\frac{7\,e\,(a+b\,\text{Log}[c\,x^n])}{d^8\,x}+\frac{e^2\,(a+b\,\text{Log}[c\,x^n])}{6\,d^3\,(d+e\,x)^6}+\frac{3\,e^2\,(a+b\,\text{Log}[c\,x^n])}{5\,d^4\,(d+e\,x)^5}+\frac{3\,e^2\,(a+b\,\text{Log}[c\,x^n])}{2\,d^5\,(d+e\,x)^4}+\frac{10\,e^2\,(a+b\,\text{Log}[c\,x^n])}{3\,d^6\,(d+e\,x)^3}+\frac{15\,e^2\,(a+b\,\text{Log}[c\,x^n])}{2\,d^7\,(d+e\,x)^2}-\frac{21\,e^3\,x\,(a+b\,\text{Log}[c\,x^n])}{d^9\,(d+e\,x)}-\frac{28\,e^2\,\text{Log}\left[1+\frac{d}{e\,x}\right]\,(a+b\,\text{Log}[c\,x^n])}{d^9}+\frac{341\,b\,e^2\,n\,\text{Log}[d+e\,x]}{10\,d^9}+\frac{28\,b\,e^2\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d^9}$$

Result (type 4, 423 leaves, 24 steps):

$$-\frac{b\,n}{4\,d^7\,x^2}+\frac{7\,b\,e\,n}{d^8\,x}-\frac{b\,e^2\,n}{30\,d^4\,(d+e\,x)^5}-\frac{23\,b\,e^2\,n}{120\,d^5\,(d+e\,x)^4}-\frac{34\,b\,e^2\,n}{45\,d^6\,(d+e\,x)^3}-\frac{14\,b\,e^2\,n}{5\,d^7\,(d+e\,x)^2}-\frac{131\,b\,e^2\,n}{10\,d^8\,(d+e\,x)}-\frac{131\,b\,e^2\,n\,\text{Log}[x]}{10\,d^9}-\frac{a+b\,\text{Log}[c\,x^n]}{2\,d^7\,x^2}+\frac{7\,e\,(a+b\,\text{Log}[c\,x^n])}{d^8\,x}+\frac{e^2\,(a+b\,\text{Log}[c\,x^n])}{6\,d^3\,(d+e\,x)^6}+\frac{3\,e^2\,(a+b\,\text{Log}[c\,x^n])}{5\,d^4\,(d+e\,x)^5}+\frac{3\,e^2\,(a+b\,\text{Log}[c\,x^n])}{2\,d^5\,(d+e\,x)^4}+\frac{10\,e^2\,(a+b\,\text{Log}[c\,x^n])}{3\,d^6\,(d+e\,x)^3}+\frac{15\,e^2\,(a+b\,\text{Log}[c\,x^n])}{2\,d^7\,(d+e\,x)^2}-\frac{21\,e^3\,x\,(a+b\,\text{Log}[c\,x^n])}{d^9\,(d+e\,x)}+\frac{14\,e^2\,(a+b\,\text{Log}[c\,x^n])^2}{b\,d^9\,n}+\frac{341\,b\,e^2\,n\,\text{Log}[d+e\,x]}{10\,d^9}-\frac{28\,e^2\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^9}-\frac{28\,b\,e^2\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^9}$$

Problem 86: Result valid but suboptimal antiderivative.

$$\int (d+e\,x)^2\,(a+b\,\text{Log}[c\,x^n])^2\,dx$$

Optimal (type 3, 173 leaves, 5 steps):

$$2\,b^2\,d^2\,n^2\,x+\frac{1}{2}\,b^2\,d\,e\,n^2\,x^2+\frac{2}{27}\,b^2\,e^2\,n^2\,x^3+\frac{b^2\,d^3\,n^2\,\text{Log}[x]^2}{3\,e}-2\,b\,d^2\,n\,x\,(a+b\,\text{Log}[c\,x^n])-b\,d\,e\,n\,x^2\,(a+b\,\text{Log}[c\,x^n])-\frac{2}{9}\,b\,e^2\,n\,x^3\,(a+b\,\text{Log}[c\,x^n])-\frac{2\,b\,d^3\,n\,\text{Log}[x]\,(a+b\,\text{Log}[c\,x^n])}{3\,e}+\frac{(d+e\,x)^3\,(a+b\,\text{Log}[c\,x^n])^2}{3\,e}$$

Result (type 3, 141 leaves, 5 steps):

$$2 b^2 d^2 n^2 x + \frac{1}{2} b^2 d e n^2 x^2 + \frac{2}{27} b^2 e^2 n^2 x^3 + \frac{b^2 d^3 n^2 \text{Log}[x]^2}{3 e} - \frac{b n \left(18 d^2 e x + 9 d e^2 x^2 + 2 e^3 x^3 + 6 d^3 \text{Log}[x]\right) \left(a + b \text{Log}[c x^n]\right)}{9 e} + \frac{(d + e x)^3 \left(a + b \text{Log}[c x^n]\right)^2}{3 e}$$

Problem 96: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a + b \text{Log}[c x^n]\right)^2}{x (d + e x)} \, dx$$

Optimal (type 4, 79 leaves, 3 steps):

$$-\frac{\text{Log}\left[1 + \frac{d}{e x}\right] \left(a + b \text{Log}[c x^n]\right)^2}{d} + \frac{2 b n \left(a + b \text{Log}[c x^n]\right) \text{PolyLog}\left[2, -\frac{d}{e x}\right]}{d} + \frac{2 b^2 n^2 \text{PolyLog}\left[3, -\frac{d}{e x}\right]}{d}$$

Result (type 4, 98 leaves, 6 steps):

$$\frac{\left(a + b \text{Log}[c x^n]\right)^3}{3 b d n} - \frac{\left(a + b \text{Log}[c x^n]\right)^2 \text{Log}\left[1 + \frac{e x}{d}\right]}{d} - \frac{2 b n \left(a + b \text{Log}[c x^n]\right) \text{PolyLog}\left[2, -\frac{e x}{d}\right]}{d} + \frac{2 b^2 n^2 \text{PolyLog}\left[3, -\frac{e x}{d}\right]}{d}$$

Problem 97: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a + b \text{Log}[c x^n]\right)^2}{x^2 (d + e x)} \, dx$$

Optimal (type 4, 135 leaves, 6 steps):

$$-\frac{2 b^2 n^2}{d x} - \frac{2 b n \left(a + b \text{Log}[c x^n]\right)}{d x} - \frac{\left(a + b \text{Log}[c x^n]\right)^2}{d x} + \frac{e \text{Log}\left[1 + \frac{d}{e x}\right] \left(a + b \text{Log}[c x^n]\right)^2}{d^2} - \frac{2 b e n \left(a + b \text{Log}[c x^n]\right) \text{PolyLog}\left[2, -\frac{d}{e x}\right]}{d^2} - \frac{2 b^2 e n^2 \text{PolyLog}\left[3, -\frac{d}{e x}\right]}{d^2}$$

Result (type 4, 155 leaves, 9 steps):

$$-\frac{2 b^2 n^2}{d x} - \frac{2 b n \left(a + b \text{Log}[c x^n]\right)}{d x} - \frac{\left(a + b \text{Log}[c x^n]\right)^2}{d x} - \frac{e \left(a + b \text{Log}[c x^n]\right)^3}{3 b d^2 n} + \frac{e \left(a + b \text{Log}[c x^n]\right)^2 \text{Log}\left[1 + \frac{e x}{d}\right]}{d^2} + \frac{2 b e n \left(a + b \text{Log}[c x^n]\right) \text{PolyLog}\left[2, -\frac{e x}{d}\right]}{d^2} - \frac{2 b^2 e n^2 \text{PolyLog}\left[3, -\frac{e x}{d}\right]}{d^2}$$

Problem 98: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{x^3 (d+e x)} \, dx$$

Optimal (type 4, 204 leaves, 9 steps):

$$-\frac{b^2 n^2}{4 d x^2}+\frac{2 b^2 e n^2}{d^2 x}-\frac{b n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{2 d x^2}+\frac{2 b e n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d^2 x}-\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 d x^2}+\frac{e \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{d^2 x}-\frac{e^2 \operatorname{Log}\left[1+\frac{d}{e x}\right] \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{d^3}+\frac{2 b e^2 n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{d}{e x}\right]}{d^3}+\frac{2 b^2 e^2 n^2 \operatorname{PolyLog}\left[3,-\frac{d}{e x}\right]}{d^3}$$

Result (type 4, 226 leaves, 11 steps):

$$-\frac{b^2 n^2}{4 d x^2}+\frac{2 b^2 e n^2}{d^2 x}-\frac{b n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{2 d x^2}+\frac{2 b e n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d^2 x}-\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 d x^2}+\frac{e \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{d^2 x}+\frac{e^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^3}{3 b d^3 n}-\frac{e^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}\left[1+\frac{e x}{d}\right]}{d^3}-\frac{2 b e^2 n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^3}+\frac{2 b^2 e^2 n^2 \operatorname{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^3}$$

Problem 99: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{x^4 (d+e x)} \, dx$$

Optimal (type 4, 273 leaves, 12 steps):

$$-\frac{2 b^2 n^2}{27 d x^3}+\frac{b^2 e n^2}{4 d^2 x^2}-\frac{2 b^2 e^2 n^2}{d^3 x}-\frac{2 b n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{9 d x^3}+\frac{b e n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{2 d^2 x^2}-\frac{2 b e^2 n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d^3 x}-\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{3 d x^3}+\frac{e \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 d^2 x^2}-\frac{e^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{d^3 x}+\frac{e^3 \operatorname{Log}\left[1+\frac{d}{e x}\right] \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{d^4}-\frac{2 b e^3 n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{d}{e x}\right]}{d^4}-\frac{2 b^2 e^3 n^2 \operatorname{PolyLog}\left[3,-\frac{d}{e x}\right]}{d^4}$$

Result (type 4, 295 leaves, 13 steps):

$$-\frac{2 b^2 n^2}{27 d x^3}+\frac{b^2 e n^2}{4 d^2 x^2}-\frac{2 b^2 e^2 n^2}{d^3 x}-\frac{2 b n \left(a+b \text{Log}\left[c x^n\right]\right)}{9 d x^3}+\frac{b e n \left(a+b \text{Log}\left[c x^n\right]\right)}{2 d^2 x^2}-\frac{2 b e^2 n \left(a+b \text{Log}\left[c x^n\right]\right)}{d^3 x}-\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2}{3 d x^3}+\frac{e \left(a+b \text{Log}\left[c x^n\right]\right)^2}{2 d^2 x^2}-\frac{e^2 \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^3 x}-\frac{e^3 \left(a+b \text{Log}\left[c x^n\right]\right)^3}{3 b d^4 n}+\frac{e^3 \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[1+\frac{e x}{d}\right]}{d^4}+\frac{2 b e^3 n \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^4}-\frac{2 b^2 e^3 n^2 \text{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^4}$$

Problem 104: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2}{x (d+e x)^2} \, dx$$

Optimal (type 4, 151 leaves, 7 steps):

$$-\frac{e x \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^2 (d+e x)}-\frac{\text{Log}\left[1+\frac{d}{e x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^2}+\frac{2 b n \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[1+\frac{e x}{d}\right]}{d^2}+\frac{2 b n \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-\frac{d}{e x}\right]}{d^2}+\frac{2 b^2 n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^2}+\frac{2 b^2 n^2 \text{PolyLog}\left[3,-\frac{d}{e x}\right]}{d^2}$$

Result (type 4, 170 leaves, 10 steps):

$$-\frac{e x \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^2 (d+e x)}+\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^3}{3 b d^2 n}+\frac{2 b n \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[1+\frac{e x}{d}\right]}{d^2}-\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[1+\frac{e x}{d}\right]}{d^2}+\frac{2 b^2 n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^2}-\frac{2 b n \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^2}+\frac{2 b^2 n^2 \text{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^2}$$

Problem 105: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2}{x^2 (d+e x)^2} \, dx$$

Optimal (type 4, 211 leaves, 10 steps):

$$-\frac{2 b^2 n^2}{d^2 x}-\frac{2 b n \left(a+b \text{Log}\left[c x^n\right]\right)}{d^2 x}-\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^2 x}+\frac{e^2 x \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^3 (d+e x)}+\frac{2 e \text{Log}\left[1+\frac{d}{e x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^3}-\frac{2 b e n \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[1+\frac{e x}{d}\right]}{d^3}-\frac{4 b e n \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-\frac{d}{e x}\right]}{d^3}-\frac{2 b^2 e n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^3}-\frac{4 b^2 e n^2 \text{PolyLog}\left[3,-\frac{d}{e x}\right]}{d^3}$$

Result (type 4, 231 leaves, 12 steps):

$$-\frac{2 b^2 n^2}{d^2 x}-\frac{2 b n \left(a+b \text{Log}\left[c x^n\right]\right)}{d^2 x}-\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^2 x}+\frac{e^2 x \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^3 (d+e x)}-\frac{2 e \left(a+b \text{Log}\left[c x^n\right]\right)^3}{3 b d^3 n}-\frac{2 b e n \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[1+\frac{e x}{d}\right]}{d^3}+\frac{2 e \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[1+\frac{e x}{d}\right]}{d^3}-\frac{2 b^2 e n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^3}+\frac{4 b e n \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^3}-\frac{4 b^2 e n^2 \text{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^3}$$

Problem 106: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2}{x^3 (d+e x)^2} \, dx$$

Optimal (type 4, 285 leaves, 12 steps):

$$-\frac{b^2 n^2}{4 d^2 x^2}+\frac{4 b^2 e n^2}{d^3 x}-\frac{b n \left(a+b \text{Log}\left[c x^n\right]\right)}{2 d^2 x^2}+\frac{4 b e n \left(a+b \text{Log}\left[c x^n\right]\right)}{d^3 x}-\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2}{2 d^2 x^2}+\frac{2 e \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^3 x}-\frac{e^3 x \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^4 (d+e x)}-\frac{3 e^2 \text{Log}\left[1+\frac{d}{e x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^4}+\frac{2 b e^2 n \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[1+\frac{e x}{d}\right]}{d^4}+\frac{6 b e^2 n \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-\frac{d}{e x}\right]}{d^4}+\frac{2 b^2 e^2 n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^4}+\frac{6 b^2 e^2 n^2 \text{PolyLog}\left[3,-\frac{d}{e x}\right]}{d^4}$$

Result (type 4, 304 leaves, 14 steps):

$$-\frac{b^2 n^2}{4 d^2 x^2}+\frac{4 b^2 e n^2}{d^3 x}-\frac{b n \left(a+b \text{Log}\left[c x^n\right]\right)}{2 d^2 x^2}+\frac{4 b e n \left(a+b \text{Log}\left[c x^n\right]\right)}{d^3 x}-\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2}{2 d^2 x^2}+\frac{2 e \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^3 x}-\frac{e^3 x \left(a+b \text{Log}\left[c x^n\right]\right)^2}{d^4 (d+e x)}+\frac{e^2 \left(a+b \text{Log}\left[c x^n\right]\right)^3}{b d^4 n}+\frac{2 b e^2 n \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[1+\frac{e x}{d}\right]}{d^4}-\frac{3 e^2 \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[1+\frac{e x}{d}\right]}{d^4}+\frac{2 b^2 e^2 n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^4}-\frac{6 b e^2 n \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^4}+\frac{6 b^2 e^2 n^2 \text{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^4}$$

Problem 107: Result optimal but 2 more steps used.

$$\int \frac{x^3 \left(a+b \text{Log}\left[c x^n\right]\right)^2}{(d+e x)^3} \, dx$$

Optimal (type 4, 296 leaves, 17 steps):

$$-\frac{2\,a\,b\,n\,x}{e^3}+\frac{2\,b^2\,n^2\,x}{e^3}-\frac{2\,b^2\,n\,x\,\mathrm{Log}[c\,x^n]}{e^3}+\frac{b\,d\,n\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{e^3\,(d+e\,x)}-\frac{d\,(a+b\,\mathrm{Log}[c\,x^n])^2}{2\,e^4}+\frac{x\,(a+b\,\mathrm{Log}[c\,x^n])^2}{e^3}+\frac{d^3\,(a+b\,\mathrm{Log}[c\,x^n])^2}{2\,e^4\,(d+e\,x)^2}+\frac{3\,d\,x\,(a+b\,\mathrm{Log}[c\,x^n])^2}{e^3\,(d+e\,x)}-\frac{b^2\,d\,n^2\,\mathrm{Log}[d+e\,x]}{e^4}-\frac{5\,b\,d\,n\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{e^4}-\frac{3\,d\,(a+b\,\mathrm{Log}[c\,x^n])^2\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{e^4}-\frac{5\,b^2\,d\,n^2\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^4}-\frac{6\,b\,d\,n\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^4}+\frac{6\,b^2\,d\,n^2\,\mathrm{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{e^4}$$

Result (type 4, 296 leaves, 19 steps):

$$-\frac{2\,a\,b\,n\,x}{e^3}+\frac{2\,b^2\,n^2\,x}{e^3}-\frac{2\,b^2\,n\,x\,\mathrm{Log}[c\,x^n]}{e^3}+\frac{b\,d\,n\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{e^3\,(d+e\,x)}-\frac{d\,(a+b\,\mathrm{Log}[c\,x^n])^2}{2\,e^4}+\frac{x\,(a+b\,\mathrm{Log}[c\,x^n])^2}{e^3}+\frac{d^3\,(a+b\,\mathrm{Log}[c\,x^n])^2}{2\,e^4\,(d+e\,x)^2}+\frac{3\,d\,x\,(a+b\,\mathrm{Log}[c\,x^n])^2}{e^3\,(d+e\,x)}-\frac{b^2\,d\,n^2\,\mathrm{Log}[d+e\,x]}{e^4}-\frac{5\,b\,d\,n\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{e^4}-\frac{3\,d\,(a+b\,\mathrm{Log}[c\,x^n])^2\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{e^4}-\frac{5\,b^2\,d\,n^2\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^4}-\frac{6\,b\,d\,n\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^4}+\frac{6\,b^2\,d\,n^2\,\mathrm{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{e^4}$$

Problem 108: Result optimal but 2 more steps used.

$$\int\frac{x^2\,(a+b\,\mathrm{Log}[c\,x^n])^2}{(d+e\,x)^3}\,dx$$

Optimal (type 4, 232 leaves, 14 steps):

$$-\frac{b\,n\,x\,(a+b\,\mathrm{Log}[c\,x^n])}{e^2\,(d+e\,x)}+\frac{(a+b\,\mathrm{Log}[c\,x^n])^2}{2\,e^3}-\frac{d^2\,(a+b\,\mathrm{Log}[c\,x^n])^2}{2\,e^3\,(d+e\,x)^2}-\frac{2\,x\,(a+b\,\mathrm{Log}[c\,x^n])^2}{e^2\,(d+e\,x)}+\frac{b^2\,n^2\,\mathrm{Log}[d+e\,x]}{e^3}+\frac{3\,b\,n\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{e^3}+\frac{(a+b\,\mathrm{Log}[c\,x^n])^2\,\mathrm{Log}\left[1+\frac{e\,x}{d}\right]}{e^3}+\frac{3\,b^2\,n^2\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^3}+\frac{2\,b\,n\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{e^3}-\frac{2\,b^2\,n^2\,\mathrm{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{e^3}$$

Result (type 4, 232 leaves, 16 steps):

$$-\frac{b n x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{e^2 (d+e x)}+\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 e^3}-\frac{d^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 e^3 (d+e x)^2}-\frac{2 x \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{e^2 (d+e x)}+$$
$$\frac{b^2 n^2 \operatorname{Log}[d+e x]}{e^3}+\frac{3 b n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{e^3}+\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}\left[1+\frac{e x}{d}\right]}{e^3}+$$
$$\frac{3 b^2 n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{e^3}+\frac{2 b n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{e^3}-\frac{2 b^2 n^2 \operatorname{PolyLog}\left[3,-\frac{e x}{d}\right]}{e^3}$$

Problem 109: Result valid but suboptimal antiderivative.

$$\int \frac{x \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{(d+e x)^3} \, dx$$

Optimal (type 4, 112 leaves, 4 steps):

$$\frac{b n x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d e (d+e x)}+\frac{x^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 d (d+e x)^2}-$$
$$\frac{b n \left(a+b n+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{d e^2}-\frac{b^2 n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d e^2}$$

Result (type 4, 176 leaves, 13 steps):

$$\frac{b n x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d e (d+e x)}-\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 d e^2}+\frac{d \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 e^2 (d+e x)^2}+\frac{x \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{d e (d+e x)}-$$
$$\frac{b^2 n^2 \operatorname{Log}[d+e x]}{d e^2}-\frac{b n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{d e^2}-\frac{b^2 n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d e^2}$$

Problem 110: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{(d+e x)^3} \, dx$$

Optimal (type 4, 126 leaves, 6 steps):

$$-\frac{b n x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d^2 (d+e x)}-\frac{b n \operatorname{Log}\left[1+\frac{d}{e x}\right] \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d^2 e}-$$
$$\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 e (d+e x)^2}+\frac{b^2 n^2 \operatorname{Log}[d+e x]}{d^2 e}+\frac{b^2 n^2 \operatorname{PolyLog}\left[2,-\frac{d}{e x}\right]}{d^2 e}$$

Result (type 4, 145 leaves, 8 steps):

$$-\frac{b n x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d^2 (d+e x)}+\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 d^2 e}-\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 e (d+e x)^2}+$$
$$\frac{b^2 n^2 \operatorname{Log}[d+e x]}{d^2 e}-\frac{b n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{d^2 e}-\frac{b^2 n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^2 e}$$

Problem 111: Result optimal but 5 more steps used.

$$\int \frac{(a+b\,\text{Log}[c\,x^n])^2}{x\,(d+e\,x)^3}\,dx$$

Optimal (type 4, 257 leaves, 14 steps):

$$\frac{b\,e\,n\,x\,(a+b\,\text{Log}[c\,x^n])}{d^3\,(d+e\,x)}-\frac{(a+b\,\text{Log}[c\,x^n])^2}{2\,d^3}+\frac{(a+b\,\text{Log}[c\,x^n])^2}{2\,d\,(d+e\,x)^2}-\frac{e\,x\,(a+b\,\text{Log}[c\,x^n])^2}{d^3\,(d+e\,x)}+\frac{(a+b\,\text{Log}[c\,x^n])^3}{3\,b\,d^3\,n}-\frac{b^2\,n^2\,\text{Log}[d+e\,x]}{d^3}+\frac{3\,b\,n\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^3}-\frac{(a+b\,\text{Log}[c\,x^n])^2\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^3}+\frac{3\,b^2\,n^2\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}-\frac{2\,b\,n\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}+\frac{2\,b^2\,n^2\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d^3}$$

Result (type 4, 257 leaves, 19 steps):

$$\frac{b\,e\,n\,x\,(a+b\,\text{Log}[c\,x^n])}{d^3\,(d+e\,x)}-\frac{(a+b\,\text{Log}[c\,x^n])^2}{2\,d^3}+\frac{(a+b\,\text{Log}[c\,x^n])^2}{2\,d\,(d+e\,x)^2}-\frac{e\,x\,(a+b\,\text{Log}[c\,x^n])^2}{d^3\,(d+e\,x)}+\frac{(a+b\,\text{Log}[c\,x^n])^3}{3\,b\,d^3\,n}-\frac{b^2\,n^2\,\text{Log}[d+e\,x]}{d^3}+\frac{3\,b\,n\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^3}-\frac{(a+b\,\text{Log}[c\,x^n])^2\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^3}+\frac{3\,b^2\,n^2\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}-\frac{2\,b\,n\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}+\frac{2\,b^2\,n^2\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d^3}$$

Problem 112: Result optimal but 4 more steps used.

$$\int \frac{(a+b\,\text{Log}[c\,x^n])^2}{x^2\,(d+e\,x)^3}\,dx$$

Optimal (type 4, 322 leaves, 16 steps):

$$-\frac{2\,b^2\,n^2}{d^3\,x}-\frac{2\,b\,n\,(a+b\,\text{Log}[c\,x^n])}{d^3\,x}-\frac{b\,e^2\,n\,x\,(a+b\,\text{Log}[c\,x^n])}{d^4\,(d+e\,x)}+\frac{e\,(a+b\,\text{Log}[c\,x^n])^2}{2\,d^4}-\frac{(a+b\,\text{Log}[c\,x^n])^2}{d^3\,x}-\frac{e\,(a+b\,\text{Log}[c\,x^n])^2}{2\,d^2\,(d+e\,x)^2}+\frac{2\,e^2\,x\,(a+b\,\text{Log}[c\,x^n])^2}{d^4\,(d+e\,x)}-\frac{e\,(a+b\,\text{Log}[c\,x^n])^3}{b\,d^4\,n}+\frac{b^2\,e\,n^2\,\text{Log}[d+e\,x]}{d^4}-\frac{5\,b\,e\,n\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^4}+\frac{3\,e\,(a+b\,\text{Log}[c\,x^n])^2\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^4}-\frac{5\,b^2\,e\,n^2\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^4}+\frac{6\,b\,e\,n\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^4}-\frac{6\,b^2\,e\,n^2\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d^4}$$

Result (type 4, 322 leaves, 20 steps):

$$-\frac{2 b^2 n^2}{d^3 x}-\frac{2 b n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d^3 x}-\frac{b e^2 n x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{d^4 (d+e x)}+\frac{e \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 d^4}-\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{d^3 x}-\frac{e \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 d^2 (d+e x)^2}+\frac{2 e^2 x \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{d^4 (d+e x)}-\frac{e \left(a+b \operatorname{Log}\left[c x^n\right]\right)^3}{b d^4 n}+\frac{b^2 e n^2 \operatorname{Log}[d+e x]}{d^4}-\frac{5 b e n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{d^4}+\frac{3 e \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}\left[1+\frac{e x}{d}\right]}{d^4}-\frac{5 b^2 e n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^4}+\frac{6 b e n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^4}-\frac{6 b^2 e n^2 \operatorname{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^4}$$

Problem 113: Result optimal but 4 more steps used.

$$\int \frac{x^4 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{(d+e x)^4} \, dx$$

Optimal (type 4, 398 leaves, 27 steps):

$$-\frac{2 a b n x}{e^4}+\frac{2 b^2 n^2 x}{e^4}-\frac{b^2 d^2 n^2}{3 e^5 (d+e x)}-\frac{b^2 d n^2 \operatorname{Log}[x]}{3 e^5}-\frac{2 b^2 n x \operatorname{Log}\left[c x^n\right]}{e^4}+\frac{b d^3 n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 e^5 (d+e x)^2}+\frac{10 b d n x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 e^4 (d+e x)}-\frac{5 d \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{3 e^5}+\frac{x \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{e^4}-\frac{d^4 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{3 e^5 (d+e x)^3}+\frac{2 d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{e^5 (d+e x)^2}+\frac{6 d x \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{e^4 (d+e x)}-\frac{3 b^2 d n^2 \operatorname{Log}[d+e x]}{e^5}-\frac{26 b d n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{3 e^5}-\frac{4 d \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}\left[1+\frac{e x}{d}\right]}{e^5}-\frac{26 b^2 d n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 e^5}-\frac{8 b d n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{e^5}+\frac{8 b^2 d n^2 \operatorname{PolyLog}\left[3,-\frac{e x}{d}\right]}{e^5}$$

Result (type 4, 398 leaves, 31 steps):

$$-\frac{2 a b n x}{e^4}+\frac{2 b^2 n^2 x}{e^4}-\frac{b^2 d^2 n^2}{3 e^5 (d+e x)}-\frac{b^2 d n^2 \operatorname{Log}[x]}{3 e^5}-\frac{2 b^2 n x \operatorname{Log}\left[c x^n\right]}{e^4}+\frac{b d^3 n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 e^5 (d+e x)^2}+\frac{10 b d n x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 e^4 (d+e x)}-\frac{5 d \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{3 e^5}+\frac{x \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{e^4}-\frac{d^4 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{3 e^5 (d+e x)^3}+\frac{2 d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{e^5 (d+e x)^2}+\frac{6 d x \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{e^4 (d+e x)}-\frac{3 b^2 d n^2 \operatorname{Log}[d+e x]}{e^5}-\frac{26 b d n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{3 e^5}-\frac{4 d \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}\left[1+\frac{e x}{d}\right]}{e^5}-\frac{26 b^2 d n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 e^5}-\frac{8 b d n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{e^5}+\frac{8 b^2 d n^2 \operatorname{PolyLog}\left[3,-\frac{e x}{d}\right]}{e^5}$$

Problem 114: Result optimal but 4 more steps used.

$$\int \frac{x^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{(d+e x)^4} \, dx$$

Optimal (type 4, 333 leaves, 24 steps):

$$\frac{b^2 d n^2}{3 e^4 (d+e x)}+\frac{b^2 n^2 \operatorname{Log}[x]}{3 e^4}-\frac{b d^2 n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 e^4 (d+e x)^2}-\frac{7 b n x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 e^3 (d+e x)}+\frac{7 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{6 e^4}+\frac{d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{3 e^4 (d+e x)^3}-\frac{3 d^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 e^4 (d+e x)^2}-\frac{3 x \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{e^3 (d+e x)}+\frac{2 b^2 n^2 \operatorname{Log}[d+e x]}{e^4}+\frac{11 b n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{3 e^4}+\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}\left[1+\frac{e x}{d}\right]}{e^4}+\frac{11 b^2 n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 e^4}+\frac{2 b n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{e^4}-\frac{2 b^2 n^2 \operatorname{PolyLog}\left[3,-\frac{e x}{d}\right]}{e^4}$$

Result (type 4, 333 leaves, 28 steps):

$$\frac{b^2 d n^2}{3 e^4 (d+e x)}+\frac{b^2 n^2 \operatorname{Log}[x]}{3 e^4}-\frac{b d^2 n \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 e^4 (d+e x)^2}-\frac{7 b n x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 e^3 (d+e x)}+\frac{7 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{6 e^4}+\frac{d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{3 e^4 (d+e x)^3}-\frac{3 d^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{2 e^4 (d+e x)^2}-\frac{3 x \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{e^3 (d+e x)}+\frac{2 b^2 n^2 \operatorname{Log}[d+e x]}{e^4}+\frac{11 b n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{3 e^4}+\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}\left[1+\frac{e x}{d}\right]}{e^4}+\frac{11 b^2 n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 e^4}+\frac{2 b n \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{e^4}-\frac{2 b^2 n^2 \operatorname{PolyLog}\left[3,-\frac{e x}{d}\right]}{e^4}$$

Problem 115: Result valid but suboptimal antiderivative.

$$\int \frac{x^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{(d+e x)^4} \, dx$$

Optimal (type 4, 161 leaves, 5 steps):

$$\frac{b n x^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 d e (d+e x)^2}+\frac{x^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{3 d (d+e x)^3}+\frac{b n x \left(2 a+b n+2 b \operatorname{Log}\left[c x^n\right]\right)}{3 d e^2 (d+e x)}-\frac{b n \left(2 a+3 b n+2 b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{3 d e^3}-\frac{2 b^2 n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 d e^3}$$

Result (type 4, 274 leaves, 25 steps):

$$-\frac{b^2 n^2}{3 e^3 (d+e x)}-\frac{b^2 n^2 \text{Log}[x]}{3 d e^3}+\frac{b d n (a+b \text{Log}[c x^n])}{3 e^3 (d+e x)^2}+\frac{4 b n x (a+b \text{Log}[c x^n])}{3 d e^2 (d+e x)}-\frac{2 (a+b \text{Log}[c x^n])^2}{3 d e^3}-\frac{d^2 (a+b \text{Log}[c x^n])^2}{3 e^3 (d+e x)^3}+\frac{d (a+b \text{Log}[c x^n])^2}{e^3 (d+e x)^2}+\frac{x (a+b \text{Log}[c x^n])^2}{d e^2 (d+e x)}-\frac{b^2 n^2 \text{Log}[d+e x]}{d e^3}-\frac{2 b n (a+b \text{Log}[c x^n]) \text{Log}\left[1+\frac{e x}{d}\right]}{3 d e^3}-\frac{2 b^2 n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 d e^3}$$

Problem 116: Result valid but suboptimal antiderivative.

$$\int \frac{x (a+b \text{Log}[c x^n])^2}{(d+e x)^4} \, dx$$

Optimal (type 4, 210 leaves, 8 steps):

$$\frac{b^2 n^2}{3 d e^2 (d+e x)}-\frac{b n (a+b \text{Log}[c x^n])}{3 e^2 (d+e x)^2}+\frac{b n (a+b \text{Log}[c x^n])}{3 d e^2 (d+e x)}+\frac{(a+b \text{Log}[c x^n])^2}{6 d^2 e^2}+\frac{d (a+b \text{Log}[c x^n])^2}{3 e^2 (d+e x)^3}-\frac{(a+b \text{Log}[c x^n])^2}{2 e^2 (d+e x)^2}-\frac{b n (a+b \text{Log}[c x^n]) \text{Log}\left[1+\frac{e x}{d}\right]}{3 d^2 e^2}-\frac{b^2 n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 d^2 e^2}$$

Result (type 4, 229 leaves, 22 steps):

$$\frac{b^2 n^2}{3 d e^2 (d+e x)}+\frac{b^2 n^2 \text{Log}[x]}{3 d^2 e^2}-\frac{b n (a+b \text{Log}[c x^n])}{3 e^2 (d+e x)^2}-\frac{b n x (a+b \text{Log}[c x^n])}{3 d^2 e (d+e x)}+\frac{(a+b \text{Log}[c x^n])^2}{6 d^2 e^2}+\frac{d (a+b \text{Log}[c x^n])^2}{3 e^2 (d+e x)^3}-\frac{(a+b \text{Log}[c x^n])^2}{2 e^2 (d+e x)^2}-\frac{b n (a+b \text{Log}[c x^n]) \text{Log}\left[1+\frac{e x}{d}\right]}{3 d^2 e^2}-\frac{b^2 n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 d^2 e^2}$$

Problem 117: Result valid but suboptimal antiderivative.

$$\int \frac{(a+b \text{Log}[c x^n])^2}{(d+e x)^4} \, dx$$

Optimal (type 4, 203 leaves, 10 steps):

$$-\frac{b^2 n^2}{3 d^2 e (d+e x)}-\frac{b^2 n^2 \text{Log}[x]}{3 d^3 e}+\frac{b n (a+b \text{Log}[c x^n])}{3 d e (d+e x)^2}-\frac{2 b n x (a+b \text{Log}[c x^n])}{3 d^3 (d+e x)}-\frac{2 b n \text{Log}\left[1+\frac{d}{e x}\right] (a+b \text{Log}[c x^n])}{3 d^3 e}-\frac{(a+b \text{Log}[c x^n])^2}{3 e (d+e x)^3}+\frac{b^2 n^2 \text{Log}[d+e x]}{d^3 e}+\frac{2 b^2 n^2 \text{PolyLog}\left[2,-\frac{d}{e x}\right]}{3 d^3 e}$$

Result (type 4, 221 leaves, 12 steps):

$$-\frac{b^2 n^2}{3 d^2 e (d+e x)}-\frac{b^2 n^2 \text{Log}[x]}{3 d^3 e}+\frac{b n (a+b \text{Log}[c x^n])}{3 d e (d+e x)^2}-\frac{2 b n x (a+b \text{Log}[c x^n])}{3 d^3 (d+e x)}+\frac{(a+b \text{Log}[c x^n])^2}{3 d^3 e}-\frac{(a+b \text{Log}[c x^n])^2}{3 e (d+e x)^3}+\frac{b^2 n^2 \text{Log}[d+e x]}{d^3 e}-\frac{2 b n (a+b \text{Log}[c x^n]) \text{Log}\left[1+\frac{e x}{d}\right]}{3 d^3 e}-\frac{2 b^2 n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 d^3 e}$$

Problem 118: Result optimal but 7 more steps used.

$$\int \frac{(a+b \text{Log}[c x^n])^2}{x (d+e x)^4} \, dx$$

Optimal (type 4, 351 leaves, 25 steps):

$$\frac{b^2 n^2}{3 d^3 (d+e x)}+\frac{b^2 n^2 \text{Log}[x]}{3 d^4}-\frac{b n (a+b \text{Log}[c x^n])}{3 d^2 (d+e x)^2}+\frac{5 b e n x (a+b \text{Log}[c x^n])}{3 d^4 (d+e x)}-\frac{5 (a+b \text{Log}[c x^n])^2}{6 d^4}+\frac{(a+b \text{Log}[c x^n])^2}{3 d (d+e x)^3}+\frac{(a+b \text{Log}[c x^n])^2}{2 d^2 (d+e x)^2}-\frac{e x (a+b \text{Log}[c x^n])^2}{d^4 (d+e x)}+\frac{(a+b \text{Log}[c x^n])^3}{3 b d^4 n}-\frac{2 b^2 n^2 \text{Log}[d+e x]}{d^4}+\frac{11 b n (a+b \text{Log}[c x^n]) \text{Log}\left[1+\frac{e x}{d}\right]}{3 d^4}-\frac{(a+b \text{Log}[c x^n])^2 \text{Log}\left[1+\frac{e x}{d}\right]}{d^4}+\frac{11 b^2 n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 d^4}-\frac{2 b n (a+b \text{Log}[c x^n]) \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^4}+\frac{2 b^2 n^2 \text{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^4}$$

Result (type 4, 351 leaves, 32 steps):

$$\frac{b^2 n^2}{3 d^3 (d+e x)}+\frac{b^2 n^2 \text{Log}[x]}{3 d^4}-\frac{b n (a+b \text{Log}[c x^n])}{3 d^2 (d+e x)^2}+\frac{5 b e n x (a+b \text{Log}[c x^n])}{3 d^4 (d+e x)}-$$
$$\frac{5 (a+b \text{Log}[c x^n])^2}{6 d^4}+\frac{(a+b \text{Log}[c x^n])^2}{3 d (d+e x)^3}+\frac{(a+b \text{Log}[c x^n])^2}{2 d^2 (d+e x)^2}-\frac{e x (a+b \text{Log}[c x^n])^2}{d^4 (d+e x)}+$$
$$\frac{(a+b \text{Log}[c x^n])^3}{3 b d^4 n}-\frac{2 b^2 n^2 \text{Log}[d+e x]}{d^4}+\frac{11 b n (a+b \text{Log}[c x^n]) \text{Log}\left[1+\frac{e x}{d}\right]}{3 d^4}-$$
$$\frac{(a+b \text{Log}[c x^n])^2 \text{Log}\left[1+\frac{e x}{d}\right]}{d^4}+\frac{11 b^2 n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 d^4}-$$
$$\frac{2 b n (a+b \text{Log}[c x^n]) \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^4}+\frac{2 b^2 n^2 \text{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^4}$$

Problem 119: Result optimal but 6 more steps used.

$$\int \frac{(a+b \text{Log}[c x^n])^2}{x^2 (d+e x)^4} \, dx$$

Optimal (type 4, 420 leaves, 26 steps):

$$-\frac{2 b^2 n^2}{d^4 x}-\frac{b^2 e n^2}{3 d^4 (d+e x)}-\frac{b^2 e n^2 \text{Log}[x]}{3 d^5}-\frac{2 b n (a+b \text{Log}[c x^n])}{d^4 x}+\frac{b e n (a+b \text{Log}[c x^n])}{3 d^3 (d+e x)^2}-$$
$$\frac{8 b e^2 n x (a+b \text{Log}[c x^n])}{3 d^5 (d+e x)}+\frac{4 e (a+b \text{Log}[c x^n])^2}{3 d^5}-\frac{(a+b \text{Log}[c x^n])^2}{d^4 x}-\frac{e (a+b \text{Log}[c x^n])^2}{3 d^2 (d+e x)^3}-$$
$$\frac{e (a+b \text{Log}[c x^n])^2}{d^3 (d+e x)^2}+\frac{3 e^2 x (a+b \text{Log}[c x^n])^2}{d^5 (d+e x)}-\frac{4 e (a+b \text{Log}[c x^n])^3}{3 b d^5 n}+\frac{3 b^2 e n^2 \text{Log}[d+e x]}{d^5}-$$
$$\frac{26 b e n (a+b \text{Log}[c x^n]) \text{Log}\left[1+\frac{e x}{d}\right]}{3 d^5}+\frac{4 e (a+b \text{Log}[c x^n])^2 \text{Log}\left[1+\frac{e x}{d}\right]}{d^5}-$$
$$\frac{26 b^2 e n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 d^5}+\frac{8 b e n (a+b \text{Log}[c x^n]) \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^5}-\frac{8 b^2 e n^2 \text{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^5}$$

Result (type 4, 420 leaves, 32 steps):

$$-\frac{2 b^2 n^2}{d^4 x}-\frac{b^2 e n^2}{3 d^4 (d+e x)}-\frac{b^2 e n^2 \text{Log}[x]}{3 d^5}-\frac{2 b n (a+b \text{Log}[c x^n])}{d^4 x}+\frac{b e n (a+b \text{Log}[c x^n])}{3 d^3 (d+e x)^2}-$$
$$\frac{8 b e^2 n x (a+b \text{Log}[c x^n])}{3 d^5 (d+e x)}+\frac{4 e (a+b \text{Log}[c x^n])^2}{3 d^5}-\frac{(a+b \text{Log}[c x^n])^2}{d^4 x}-\frac{e (a+b \text{Log}[c x^n])^2}{3 d^2 (d+e x)^3}-$$
$$\frac{e (a+b \text{Log}[c x^n])^2}{d^3 (d+e x)^2}+\frac{3 e^2 x (a+b \text{Log}[c x^n])^2}{d^5 (d+e x)}-\frac{4 e (a+b \text{Log}[c x^n])^3}{3 b d^5 n}+\frac{3 b^2 e n^2 \text{Log}[d+e x]}{d^5}-$$
$$\frac{26 b e n (a+b \text{Log}[c x^n]) \text{Log}\left[1+\frac{e x}{d}\right]}{3 d^5}+\frac{4 e (a+b \text{Log}[c x^n])^2 \text{Log}\left[1+\frac{e x}{d}\right]}{d^5}-$$
$$\frac{26 b^2 e n^2 \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 d^5}+\frac{8 b e n (a+b \text{Log}[c x^n]) \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^5}-\frac{8 b^2 e n^2 \text{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^5}$$

Problem 120: Result valid but suboptimal antiderivative.

$$\int \frac{x \text{Log}[x]^2}{(d+e x)^4} \, dx$$

Optimal (type 4, 107 leaves, 8 steps):

$$-\frac{x}{3 d^2 e (d+e x)}+\frac{x \text{Log}[x]}{3 d e (d+e x)^2}+\frac{x^2 (3 d+e x) \text{Log}[x]^2}{6 d^2 (d+e x)^3}-\frac{\text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]}{3 d^2 e^2}-\frac{\text{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 d^2 e^2}$$

Result (type 4, 157 leaves, 22 steps):

$$\frac{1}{3 d e^2 (d+e x)}+\frac{\text{Log}[x]}{3 d^2 e^2}-\frac{\text{Log}[x]}{3 e^2 (d+e x)^2}-\frac{x \text{Log}[x]}{3 d^2 e (d+e x)}+\frac{\text{Log}[x]^2}{6 d^2 e^2}+$$
$$\frac{d \text{Log}[x]^2}{3 e^2 (d+e x)^3}-\frac{\text{Log}[x]^2}{2 e^2 (d+e x)^2}-\frac{\text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]}{3 d^2 e^2}-\frac{\text{PolyLog}\left[2,-\frac{e x}{d}\right]}{3 d^2 e^2}$$

Problem 121: Result valid but suboptimal antiderivative.

$$\int \frac{(a+b \text{Log}[c x^n])^3}{x (d+e x)} \, dx$$

Optimal (type 4, 113 leaves, 4 steps):

$$-\frac{\text{Log}\left[1+\frac{d}{e x}\right] (a+b \text{Log}[c x^n])^3}{d}+\frac{3 b n (a+b \text{Log}[c x^n])^2 \text{PolyLog}\left[2,-\frac{d}{e x}\right]}{d}+$$
$$\frac{6 b^2 n^2 (a+b \text{Log}[c x^n]) \text{PolyLog}\left[3,-\frac{d}{e x}\right]}{d}+\frac{6 b^3 n^3 \text{PolyLog}\left[4,-\frac{d}{e x}\right]}{d}$$

Result (type 4, 130 leaves, 7 steps):

$$\frac{(a+b\,\text{Log}[c\,x^n])^4}{4\,b\,d\,n}-\frac{(a+b\,\text{Log}[c\,x^n])^3\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d}-\frac{3\,b\,n\,(a+b\,\text{Log}[c\,x^n])^2\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d}+\frac{6\,b^2\,n^2\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d}-\frac{6\,b^3\,n^3\,\text{PolyLog}\left[4,-\frac{e\,x}{d}\right]}{d}$$

Problem 122: Result valid but suboptimal antiderivative.

$$\int\frac{(a+b\,\text{Log}[c\,x^n])^3}{x\,(d+e\,x)^2}\,dx$$

Optimal (type 4, 217 leaves, 9 steps):

$$-\frac{e\,x\,(a+b\,\text{Log}[c\,x^n])^3}{d^2\,(d+e\,x)}-\frac{\text{Log}\left[1+\frac{d}{e\,x}\right]\,(a+b\,\text{Log}[c\,x^n])^3}{d^2}+\frac{3\,b\,n\,(a+b\,\text{Log}[c\,x^n])^2\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^2}+\frac{3\,b\,n\,(a+b\,\text{Log}[c\,x^n])^2\,\text{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d^2}+\frac{6\,b^2\,n^2\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^2}+\frac{6\,b^2\,n^2\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}\left[3,-\frac{d}{e\,x}\right]}{d^2}-\frac{6\,b^3\,n^3\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d^2}+\frac{6\,b^3\,n^3\,\text{PolyLog}\left[4,-\frac{d}{e\,x}\right]}{d^2}$$

Result (type 4, 234 leaves, 12 steps):

$$-\frac{e\,x\,(a+b\,\text{Log}[c\,x^n])^3}{d^2\,(d+e\,x)}+\frac{(a+b\,\text{Log}[c\,x^n])^4}{4\,b\,d^2\,n}+\frac{3\,b\,n\,(a+b\,\text{Log}[c\,x^n])^2\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^2}-\frac{(a+b\,\text{Log}[c\,x^n])^3\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^2}+\frac{6\,b^2\,n^2\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^2}-\frac{3\,b\,n\,(a+b\,\text{Log}[c\,x^n])^2\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^2}-\frac{6\,b^3\,n^3\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d^2}+\frac{6\,b^2\,n^2\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d^2}-\frac{6\,b^3\,n^3\,\text{PolyLog}\left[4,-\frac{e\,x}{d}\right]}{d^2}$$

Problem 123: Result optimal but 6 more steps used.

$$\int\frac{(a+b\,\text{Log}[c\,x^n])^3}{x\,(d+e\,x)^3}\,dx$$

Optimal (type 4, 361 leaves, 18 steps):

$$\frac{3\,b\,e\,n\,x\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{2\,d^3\,\left(d+e\,x\right)}-\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{2\,d^3}+\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{2\,d\,\left(d+e\,x\right)^2}-$$
$$\frac{e\,x\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{d^3\,\left(d+e\,x\right)}+\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^4}{4\,b\,d^3\,n}-\frac{3\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^3}+$$
$$\frac{9\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{2\,d^3}-\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^3}-\frac{3\,b^3\,n^3\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}+$$
$$\frac{9\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}-\frac{3\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}-$$
$$\frac{9\,b^3\,n^3\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d^3}+\frac{6\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d^3}-\frac{6\,b^3\,n^3\,\text{PolyLog}\left[4,-\frac{e\,x}{d}\right]}{d^3}$$

Result (type 4, 361 leaves, 24 steps):

$$\frac{3\,b\,e\,n\,x\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{2\,d^3\,\left(d+e\,x\right)}-\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{2\,d^3}+\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{2\,d\,\left(d+e\,x\right)^2}-$$
$$\frac{e\,x\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{d^3\,\left(d+e\,x\right)}+\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^4}{4\,b\,d^3\,n}-\frac{3\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^3}+$$
$$\frac{9\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{2\,d^3}-\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^3}-\frac{3\,b^3\,n^3\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}+$$
$$\frac{9\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}-\frac{3\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^3}-$$
$$\frac{9\,b^3\,n^3\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d^3}+\frac{6\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d^3}-\frac{6\,b^3\,n^3\,\text{PolyLog}\left[4,-\frac{e\,x}{d}\right]}{d^3}$$

Problem 175: Result valid but suboptimal antiderivative.

$$\int\frac{\left(d+e\,x^2\right)\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^3}\,dx$$

Optimal (type 3, 52 leaves, 3 steps):

$$-\frac{b\,d\,n}{4\,x^2}-\frac{d\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2\,x^2}+\frac{e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{2\,b\,n}$$

Result (type 3, 47 leaves, 3 steps):

$$-\frac{b\,d\,n}{4\,x^2}-\frac{1}{2}\,b\,e\,n\,\text{Log}[x]^2-\frac{1}{2}\,\left(\frac{d}{x^2}-2\,e\,\text{Log}[x]\right)\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 176: Result valid but suboptimal antiderivative.

$$\int\frac{\left(d+e\,x^2\right)\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^5}\,dx$$

Optimal (type 3, 57 leaves, 4 steps):

$$-\frac{b d n}{16 x^4}-\frac{b e n}{4 x^2}-\frac{d \left(a+b \text{Log}\left[c x^n\right]\right)}{4 x^4}-\frac{e \left(a+b \text{Log}\left[c x^n\right]\right)}{2 x^2}$$

Result (type 3, 47 leaves, 4 steps):

$$-\frac{b d n}{16 x^4}-\frac{b e n}{4 x^2}-\frac{1}{4} \left(\frac{d}{x^4}+\frac{2 e}{x^2}\right) \left(a+b \text{Log}\left[c x^n\right]\right)$$

Problem 179: Result valid but suboptimal antiderivative.

$$\int \left(d+e x^2\right) \left(a+b \text{Log}\left[c x^n\right]\right) \, dx$$

Optimal (type 3, 48 leaves, 2 steps):

$$-b d n x-\frac{1}{9} b e n x^3+d x \left(a+b \text{Log}\left[c x^n\right]\right)+\frac{1}{3} e x^3 \left(a+b \text{Log}\left[c x^n\right]\right)$$

Result (type 3, 41 leaves, 2 steps):

$$-b d n x-\frac{1}{9} b e n x^3+\frac{1}{3} \left(3 d x+e x^3\right) \left(a+b \text{Log}\left[c x^n\right]\right)$$

Problem 180: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right) \left(a+b \text{Log}\left[c x^n\right]\right)}{x^2} \, dx$$

Optimal (type 3, 44 leaves, 2 steps):

$$-\frac{b d n}{x}-b e n x-\frac{d \left(a+b \text{Log}\left[c x^n\right]\right)}{x}+e x \left(a+b \text{Log}\left[c x^n\right]\right)$$

Result (type 3, 37 leaves, 2 steps):

$$-\frac{b d n}{x}-b e n x-\left(\frac{d}{x}-e x\right) \left(a+b \text{Log}\left[c x^n\right]\right)$$

Problem 181: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right) \left(a+b \text{Log}\left[c x^n\right]\right)}{x^4} \, dx$$

Optimal (type 3, 53 leaves, 4 steps):

$$-\frac{b d n}{9 x^3}-\frac{b e n}{x}-\frac{d \left(a+b \text{Log}\left[c x^n\right]\right)}{3 x^3}-\frac{e \left(a+b \text{Log}\left[c x^n\right]\right)}{x}$$

Result (type 3, 45 leaves, 4 steps):

$$-\frac{b d n}{9 x^3}-\frac{b e n}{x}-\frac{1}{3} \left(\frac{d}{x^3}+\frac{3 e}{x}\right) \left(a+b \text{Log}\left[c x^n\right]\right)$$

Problem 182: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^6} \, dx$$

Optimal (type 3, 57 leaves, 4 steps):

$$-\frac{b d n}{25 x^5}-\frac{b e n}{9 x^3}-\frac{d \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{5 x^5}-\frac{e \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 x^3}$$

Result (type 3, 48 leaves, 4 steps):

$$-\frac{b d n}{25 x^5}-\frac{b e n}{9 x^3}-\frac{1}{15} \left(\frac{3 d}{x^5}+\frac{5 e}{x^3}\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 186: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x} \, dx$$

Optimal (type 3, 89 leaves, 3 steps):

$$-\frac{1}{2} b d e n x^2-\frac{1}{16} b e^2 n x^4-\frac{1}{2} b d^2 n \operatorname{Log}[x]^2+ d e x^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+\frac{1}{4} e^2 x^4 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+d^2 \operatorname{Log}[x] \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 73 leaves, 3 steps):

$$-\frac{1}{2} b d e n x^2-\frac{1}{16} b e^2 n x^4-\frac{1}{2} b d^2 n \operatorname{Log}[x]^2+\frac{1}{4} \left(4 d e x^2+e^2 x^4+4 d^2 \operatorname{Log}[x]\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 187: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^3} \, dx$$

Optimal (type 3, 91 leaves, 7 steps):

$$-\frac{b d^2 n}{4 x^2}-\frac{1}{4} b e^2 n x^2-b d e n \operatorname{Log}[x]^2-\frac{d^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{2 x^2}+ \frac{1}{2} e^2 x^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+2 d e \operatorname{Log}[x] \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 71 leaves, 7 steps):

$$-\frac{b d^2 n}{4 x^2}-\frac{1}{4} b e^2 n x^2-b d e n \operatorname{Log}[x]^2-\frac{1}{2} \left(\frac{d^2}{x^2}-e^2 x^2-4 d e \operatorname{Log}[x]\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 188: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^5} \, dx$$

Optimal (type 3, 90 leaves, 7 steps):

$$-\frac{b d^2 n}{16 x^4}-\frac{b d e n}{2 x^2}-\frac{1}{2} b e^2 n \operatorname{Log}[x]^2-\frac{d^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{4 x^4}-\frac{d e \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^2}+e^2 \operatorname{Log}[x] \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 73 leaves, 5 steps):

$$-\frac{b d^2 n}{16 x^4}-\frac{b d e n}{2 x^2}-\frac{1}{2} b e^2 n \operatorname{Log}[x]^2-\frac{1}{4} \left(\frac{d^2}{x^4}+\frac{4 d e}{x^2}-4 e^2 \operatorname{Log}[x]\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 191: Result valid but suboptimal antiderivative.

$$\int \left(d+e x^2\right)^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right) \, dx$$

Optimal (type 3, 86 leaves, 2 steps):

$$-b d^2 n x-\frac{2}{9} b d e n x^3-\frac{1}{25} b e^2 n x^5+d^2 x \left(a+b \operatorname{Log}\left[c x^n\right]\right)+\frac{2}{3} d e x^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+\frac{1}{5} e^2 x^5 \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 68 leaves, 2 steps):

$$-b d^2 n x-\frac{2}{9} b d e n x^3-\frac{1}{25} b e^2 n x^5+\frac{1}{15} \left(15 d^2 x+10 d e x^3+3 e^2 x^5\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 192: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^2} \, dx$$

Optimal (type 3, 83 leaves, 2 steps):

$$-\frac{b d^2 n}{x}-2 b d e n x-\frac{1}{9} b e^2 n x^3-\frac{d^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x}+2 d e x \left(a+b \operatorname{Log}\left[c x^n\right]\right)+\frac{1}{3} e^2 x^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 66 leaves, 2 steps):

$$-\frac{b d^2 n}{x}-2 b d e n x-\frac{1}{9} b e^2 n x^3-\frac{1}{3} \left(\frac{3 d^2}{x}-6 d e x-e^2 x^3\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 193: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^4} \, dx$$

Optimal (type 3, 82 leaves, 2 steps):

$$-\frac{b d^2 n}{9 x^3}-\frac{2 b d e n}{x}-b e^2 n x-\frac{d^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 x^3}-\frac{2 d e \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x}+e^2 x \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 65 leaves, 2 steps):

$$-\frac{b d^2 n}{9 x^3}-\frac{2 b d e n}{x}-b e^2 n x-\frac{1}{3} \left(\frac{d^2}{x^3}+\frac{6 d e}{x}-3 e^2 x\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 194: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^6} \, dx$$

Optimal (type 3, 91 leaves, 4 steps):

$$-\frac{b d^2 n}{25 x^5}-\frac{2 b d e n}{9 x^3}-\frac{b e^2 n}{x}-\frac{d^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{5 x^5}-\frac{2 d e \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 x^3}-\frac{e^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x}$$

Result (type 3, 72 leaves, 4 steps):

$$-\frac{b d^2 n}{25 x^5}-\frac{2 b d e n}{9 x^3}-\frac{b e^2 n}{x}-\frac{1}{15} \left(\frac{3 d^2}{x^5}+\frac{10 d e}{x^3}+\frac{15 e^2}{x}\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 195: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^8} \, dx$$

Optimal (type 3, 95 leaves, 4 steps):

$$-\frac{b d^2 n}{49 x^7}-\frac{2 b d e n}{25 x^5}-\frac{b e^2 n}{9 x^3}-\frac{d^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{7 x^7}-\frac{2 d e \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{5 x^5}-\frac{e^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 x^3}$$

Result (type 3, 74 leaves, 4 steps):

$$-\frac{b d^2 n}{49 x^7}-\frac{2 b d e n}{25 x^5}-\frac{b e^2 n}{9 x^3}-\frac{1}{105} \left(\frac{15 d^2}{x^7}+\frac{42 d e}{x^5}+\frac{35 e^2}{x^3}\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 199: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x} \, dx$$

Optimal (type 3, 130 leaves, 5 steps):

$$-\frac{3}{4} b d^2 e n x^2-\frac{3}{16} b d e^2 n x^4-\frac{1}{36} b e^3 n x^6-\frac{1}{2} b d^3 n \operatorname{Log}[x]^2+\frac{3}{2} d^2 e x^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+$$
$$\frac{3}{4} d e^2 x^4 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+\frac{1}{6} e^3 x^6 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+d^3 \operatorname{Log}[x] \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 100 leaves, 5 steps):

$$-\frac{3}{4} b d^2 e n x^2-\frac{3}{16} b d e^2 n x^4-\frac{1}{36} b e^3 n x^6-\frac{1}{2} b d^3 n \operatorname{Log}[x]^2+$$
$$\frac{1}{12} \left(18 d^2 e x^2+9 d e^2 x^4+2 e^3 x^6+12 d^3 \operatorname{Log}[x]\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 200: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^3} \, dx$$

Optimal (type 3, 131 leaves, 7 steps):

$$-\frac{b d^3 n}{4 x^2}-\frac{3}{4} b d e^2 n x^2-\frac{1}{16} b e^3 n x^4-\frac{3}{2} b d^2 e n \operatorname{Log}[x]^2-\frac{d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{2 x^2}+$$
$$\frac{3}{2} d e^2 x^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+\frac{1}{4} e^3 x^4 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+3 d^2 e \operatorname{Log}[x] \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 100 leaves, 7 steps):

$$-\frac{b d^3 n}{4 x^2}-\frac{3}{4} b d e^2 n x^2-\frac{1}{16} b e^3 n x^4-\frac{3}{2} b d^2 e n \operatorname{Log}[x]^2-$$
$$\frac{1}{4} \left(\frac{2 d^3}{x^2}-6 d e^2 x^2-e^3 x^4-12 d^2 e \operatorname{Log}[x]\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 201: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^5} \, dx$$

Optimal (type 3, 131 leaves, 7 steps):

$$-\frac{b d^3 n}{16 x^4}-\frac{3 b d^2 e n}{4 x^2}-\frac{1}{4} b e^3 n x^2-\frac{3}{2} b d e^2 n \operatorname{Log}[x]^2-\frac{d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{4 x^4}-$$
$$\frac{3 d^2 e \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{2 x^2}+\frac{1}{2} e^3 x^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+3 d e^2 \operatorname{Log}[x] \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 99 leaves, 7 steps):

$$-\frac{b d^3 n}{16 x^4}-\frac{3 b d^2 e n}{4 x^2}-\frac{1}{4} b e^3 n x^2-\frac{3}{2} b d e^2 n \operatorname{Log}[x]^2-$$
$$\frac{1}{4} \left(\frac{d^3}{x^4}+\frac{6 d^2 e}{x^2}-2 e^3 x^2-12 d e^2 \operatorname{Log}[x]\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 204: Result valid but suboptimal antiderivative.

$$\int \left(d+e x^2\right)^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right) dx$$

Optimal (type 3, 121 leaves, 2 steps):

$$-b d^3 n x-\frac{1}{3} b d^2 e n x^3-\frac{3}{25} b d e^2 n x^5-\frac{1}{49} b e^3 n x^7+d^3 x \left(a+b \operatorname{Log}\left[c x^n\right]\right)+d^2 e x^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+\frac{3}{5} d e^2 x^5 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+\frac{1}{7} e^3 x^7 \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 94 leaves, 2 steps):

$$-b d^3 n x-\frac{1}{3} b d^2 e n x^3-\frac{3}{25} b d e^2 n x^5-\frac{1}{49} b e^3 n x^7+\frac{1}{35} \left(35 d^3 x+35 d^2 e x^3+21 d e^2 x^5+5 e^3 x^7\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 205: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^2} dx$$

Optimal (type 3, 118 leaves, 2 steps):

$$-\frac{b d^3 n}{x}-3 b d^2 e n x-\frac{1}{3} b d e^2 n x^3-\frac{1}{25} b e^3 n x^5-\frac{d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x}+3 d^2 e x \left(a+b \operatorname{Log}\left[c x^n\right]\right)+d e^2 x^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)+\frac{1}{5} e^3 x^5 \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 92 leaves, 2 steps):

$$-\frac{b d^3 n}{x}-3 b d^2 e n x-\frac{1}{3} b d e^2 n x^3-\frac{1}{25} b e^3 n x^5-\frac{1}{5} \left(\frac{5 d^3}{x}-15 d^2 e x-5 d e^2 x^3-e^3 x^5\right) \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 206: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^2\right)^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^4} dx$$

Optimal (type 3, 121 leaves, 3 steps):

$$-\frac{b d^3 n}{9 x^3}-\frac{3 b d^2 e n}{x}-3 b d e^2 n x-\frac{1}{9} b e^3 n x^3-\frac{d^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 x^3}-\frac{3 d^2 e \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x}+3 d e^2 x \left(a+b \operatorname{Log}\left[c x^n\right]\right)+\frac{1}{3} e^3 x^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Result (type 3, 91 leaves, 3 steps):

$$-\frac{b\,d^3\,n}{9\,x^3}-\frac{3\,b\,d^2\,e\,n}{x}-3\,b\,d\,e^2\,n\,x-\frac{1}{9}\,b\,e^3\,n\,x^3-\frac{1}{3}\left(\frac{d^3}{x^3}+\frac{9\,d^2\,e}{x}-9\,d\,e^2\,x-e^3\,x^3\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 207: Result valid but suboptimal antiderivative.

$$\int\frac{\left(d+e\,x^2\right)^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^6}\,dx$$

Optimal (type 3, 118 leaves, 2 steps):

$$-\frac{b\,d^3\,n}{25\,x^5}-\frac{b\,d^2\,e\,n}{3\,x^3}-\frac{3\,b\,d\,e^2\,n}{x}-b\,e^3\,n\,x-\frac{d^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{5\,x^5}-\frac{d^2\,e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^3}-\frac{3\,d\,e^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x}+e^3\,x\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Result (type 3, 91 leaves, 2 steps):

$$-\frac{b\,d^3\,n}{25\,x^5}-\frac{b\,d^2\,e\,n}{3\,x^3}-\frac{3\,b\,d\,e^2\,n}{x}-b\,e^3\,n\,x-\frac{1}{5}\left(\frac{d^3}{x^5}+\frac{5\,d^2\,e}{x^3}+\frac{15\,d\,e^2}{x}-5\,e^3\,x\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 208: Result valid but suboptimal antiderivative.

$$\int\frac{\left(d+e\,x^2\right)^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^8}\,dx$$

Optimal (type 3, 127 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{49\,x^7}-\frac{3\,b\,d^2\,e\,n}{25\,x^5}-\frac{b\,d\,e^2\,n}{3\,x^3}-\frac{b\,e^3\,n}{x}-\frac{d^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{7\,x^7}-\frac{3\,d^2\,e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{5\,x^5}-\frac{d\,e^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^3}-\frac{e^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x}$$

Result (type 3, 98 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{49\,x^7}-\frac{3\,b\,d^2\,e\,n}{25\,x^5}-\frac{b\,d\,e^2\,n}{3\,x^3}-\frac{b\,e^3\,n}{x}-\frac{1}{35}\left(\frac{5\,d^3}{x^7}+\frac{21\,d^2\,e}{x^5}+\frac{35\,d\,e^2}{x^3}+\frac{35\,e^3}{x}\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 209: Result valid but suboptimal antiderivative.

$$\int\frac{\left(d+e\,x^2\right)^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^{10}}\,dx$$

Optimal (type 3, 133 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{81\,x^9}-\frac{3\,b\,d^2\,e\,n}{49\,x^7}-\frac{3\,b\,d\,e^2\,n}{25\,x^5}-\frac{b\,e^3\,n}{9\,x^3}-\frac{d^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{9\,x^9}-\frac{3\,d^2\,e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{7\,x^7}-\frac{3\,d\,e^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{5\,x^5}-\frac{e^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{3\,x^3}$$

Result (type 3, 100 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{81\,x^9}-\frac{3\,b\,d^2\,e\,n}{49\,x^7}-\frac{3\,b\,d\,e^2\,n}{25\,x^5}-\frac{b\,e^3\,n}{9\,x^3}-\frac{1}{315}\left(\frac{35\,d^3}{x^9}+\frac{135\,d^2\,e}{x^7}+\frac{189\,d\,e^2}{x^5}+\frac{105\,e^3}{x^3}\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 214: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\text{Log}[c\,x^n]}{x^3\,\left(d+e\,x^2\right)}\,dx$$

Optimal (type 4, 83 leaves, 4 steps):

$$-\frac{b\,n}{4\,d\,x^2}-\frac{a+b\,\text{Log}[c\,x^n]}{2\,d\,x^2}+\frac{e\,\text{Log}\left[1+\frac{d}{e\,x^2}\right]\left(a+b\,\text{Log}[c\,x^n]\right)}{2\,d^2}-\frac{b\,e\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x^2}\right]}{4\,d^2}$$

Result (type 4, 109 leaves, 6 steps):

$$-\frac{b\,n}{4\,d\,x^2}-\frac{a+b\,\text{Log}[c\,x^n]}{2\,d\,x^2}-\frac{e\,\left(a+b\,\text{Log}[c\,x^n]\right)^2}{2\,b\,d^2\,n}+\frac{e\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{Log}\left[1+\frac{e\,x^2}{d}\right]}{2\,d^2}+\frac{b\,e\,n\,\text{PolyLog}\left[2,-\frac{e\,x^2}{d}\right]}{4\,d^2}$$

Problem 215: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\text{Log}[c\,x^n]}{x^5\,\left(d+e\,x^2\right)}\,dx$$

Optimal (type 4, 121 leaves, 6 steps):

$$-\frac{b\,n}{16\,d\,x^4}+\frac{b\,e\,n}{4\,d^2\,x^2}-\frac{a+b\,\text{Log}[c\,x^n]}{4\,d\,x^4}+\frac{e\,\left(a+b\,\text{Log}[c\,x^n]\right)}{2\,d^2\,x^2}-\frac{e^2\,\text{Log}\left[1+\frac{d}{e\,x^2}\right]\left(a+b\,\text{Log}[c\,x^n]\right)}{2\,d^3}+\frac{b\,e^2\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x^2}\right]}{4\,d^3}$$

Result (type 4, 149 leaves, 7 steps):

$$-\frac{b\,n}{16\,d\,x^4}+\frac{b\,e\,n}{4\,d^2\,x^2}-\frac{a+b\,\text{Log}[c\,x^n]}{4\,d\,x^4}+\frac{e\,\left(a+b\,\text{Log}[c\,x^n]\right)}{2\,d^2\,x^2}+\frac{e^2\,\left(a+b\,\text{Log}[c\,x^n]\right)^2}{2\,b\,d^3\,n}-\frac{e^2\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{Log}\left[1+\frac{e\,x^2}{d}\right]}{2\,d^3}-\frac{b\,e^2\,n\,\text{PolyLog}\left[2,-\frac{e\,x^2}{d}\right]}{4\,d^3}$$

Problem 219: Result optimal but 1 more steps used.

$$\int\frac{a+b\,\text{Log}[c\,x^n]}{x^2\,\left(d+e\,x^2\right)}\,dx$$

Optimal (type 4, 134 leaves, 7 steps):

$$-\frac{b\,n}{d\,x}-\frac{a+b\,\text{Log}[c\,x^n]}{d\,x}-\frac{\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,(a+b\,\text{Log}[c\,x^n])}{d^{3/2}}+\frac{i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{2\,d^{3/2}}-\frac{i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{2\,d^{3/2}}$$

Result (type 4, 134 leaves, 8 steps):

$$-\frac{b\,n}{d\,x}-\frac{a+b\,\text{Log}[c\,x^n]}{d\,x}-\frac{\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,(a+b\,\text{Log}[c\,x^n])}{d^{3/2}}+\frac{i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{2\,d^{3/2}}-\frac{i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{2\,d^{3/2}}$$

Problem 225: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\text{Log}[c\,x^n]}{x^3\,(d+e\,x^2)^2}\,dx$$

Optimal (type 4, 126 leaves, 5 steps):

$$-\frac{b\,n}{2\,d^2\,x^2}+\frac{a+b\,\text{Log}[c\,x^n]}{2\,d\,x^2\,(d+e\,x^2)}-\frac{4\,a-b\,n+4\,b\,\text{Log}[c\,x^n]}{4\,d^2\,x^2}+\frac{e\,\text{Log}\left[1+\frac{d}{e\,x^2}\right]\,(4\,a-b\,n+4\,b\,\text{Log}[c\,x^n])}{4\,d^3}-\frac{b\,e\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x^2}\right]}{2\,d^3}$$

Result (type 4, 159 leaves, 7 steps):

$$-\frac{b\,n}{2\,d^2\,x^2}+\frac{a+b\,\text{Log}[c\,x^n]}{2\,d\,x^2\,(d+e\,x^2)}-\frac{4\,a-b\,n+4\,b\,\text{Log}[c\,x^n]}{4\,d^2\,x^2}-\frac{e\,(4\,a-b\,n+4\,b\,\text{Log}[c\,x^n])^2}{16\,b\,d^3\,n}+\frac{e\,(4\,a-b\,n+4\,b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x^2}{d}\right]}{4\,d^3}+\frac{b\,e\,n\,\text{PolyLog}\left[2,-\frac{e\,x^2}{d}\right]}{2\,d^3}$$

Problem 229: Result optimal but 1 more steps used.

$$\int\frac{a+b\,\text{Log}[c\,x^n]}{x^2\,(d+e\,x^2)^2}\,dx$$

Optimal (type 4, 183 leaves, 8 steps):

$$-\frac{3\,b\,n}{2\,d^2\,x}+\frac{a+b\,\text{Log}[c\,x^n]}{2\,d\,x\,(d+e\,x^2)}-\frac{3\,a-b\,n+3\,b\,\text{Log}[c\,x^n]}{2\,d^2\,x}-\frac{\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,(3\,a-b\,n+3\,b\,\text{Log}[c\,x^n])}{2\,d^{5/2}}+\frac{3\,i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{4\,d^{5/2}}-\frac{3\,i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{4\,d^{5/2}}$$

Result (type 4, 183 leaves, 9 steps):

$$-\frac{3\,b\,n}{2\,d^2\,x}+\frac{a+b\,\text{Log}[c\,x^n]}{2\,d\,x\,\left(d+e\,x^2\right)}-\frac{3\,a-b\,n+3\,b\,\text{Log}[c\,x^n]}{2\,d^2\,x}-\frac{\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\left(3\,a-b\,n+3\,b\,\text{Log}[c\,x^n]\right)}{2\,d^{5/2}}+$$
$$\frac{3\,i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{4\,d^{5/2}}-\frac{3\,i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{4\,d^{5/2}}$$

Problem 235: Result valid but suboptimal antiderivative.

$$\int\frac{a+b\,\text{Log}[c\,x^n]}{x^3\,\left(d+e\,x^2\right)^3}\,dx$$

Optimal (type 4, 162 leaves, 6 steps):

$$-\frac{3\,b\,n}{4\,d^3\,x^2}+\frac{a+b\,\text{Log}[c\,x^n]}{4\,d\,x^2\,\left(d+e\,x^2\right)^2}+\frac{6\,a-b\,n+6\,b\,\text{Log}[c\,x^n]}{8\,d^2\,x^2\,\left(d+e\,x^2\right)}-\frac{12\,a-5\,b\,n+12\,b\,\text{Log}[c\,x^n]}{8\,d^3\,x^2}+$$
$$\frac{e\,\text{Log}\left[1+\frac{d}{e\,x^2}\right]\,\left(12\,a-5\,b\,n+12\,b\,\text{Log}[c\,x^n]\right)}{8\,d^4}-\frac{3\,b\,e\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x^2}\right]}{4\,d^4}$$

Result (type 4, 195 leaves, 8 steps):

$$-\frac{3\,b\,n}{4\,d^3\,x^2}+\frac{a+b\,\text{Log}[c\,x^n]}{4\,d\,x^2\,\left(d+e\,x^2\right)^2}+\frac{6\,a-b\,n+6\,b\,\text{Log}[c\,x^n]}{8\,d^2\,x^2\,\left(d+e\,x^2\right)}-$$
$$\frac{12\,a-5\,b\,n+12\,b\,\text{Log}[c\,x^n]}{8\,d^3\,x^2}-\frac{e\,\left(12\,a-5\,b\,n+12\,b\,\text{Log}[c\,x^n]\right)^2}{96\,b\,d^4\,n}+$$
$$\frac{e\,\left(12\,a-5\,b\,n+12\,b\,\text{Log}[c\,x^n]\right)\,\text{Log}\left[1+\frac{e\,x^2}{d}\right]}{8\,d^4}+\frac{3\,b\,e\,n\,\text{PolyLog}\left[2,-\frac{e\,x^2}{d}\right]}{4\,d^4}$$

Problem 239: Result optimal but 1 more steps used.

$$\int\frac{a+b\,\text{Log}[c\,x^n]}{x^2\,\left(d+e\,x^2\right)^3}\,dx$$

Optimal (type 4, 219 leaves, 9 steps):

$$-\frac{15\,b\,n}{8\,d^3\,x}+\frac{a+b\,\text{Log}[c\,x^n]}{4\,d\,x\,\left(d+e\,x^2\right)^2}+\frac{5\,a-b\,n+5\,b\,\text{Log}[c\,x^n]}{8\,d^2\,x\,\left(d+e\,x^2\right)}-$$
$$\frac{15\,a-8\,b\,n+15\,b\,\text{Log}[c\,x^n]}{8\,d^3\,x}-\frac{\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\left(15\,a-8\,b\,n+15\,b\,\text{Log}[c\,x^n]\right)}{8\,d^{7/2}}+$$
$$\frac{15\,i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{16\,d^{7/2}}-\frac{15\,i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{16\,d^{7/2}}$$

Result (type 4, 219 leaves, 10 steps):

$$-\frac{15\,b\,n}{8\,d^3\,x}+\frac{a+b\,\text{Log}[c\,x^n]}{4\,d\,x\,\left(d+e\,x^2\right)^2}+\frac{5\,a-b\,n+5\,b\,\text{Log}[c\,x^n]}{8\,d^2\,x\,\left(d+e\,x^2\right)}-\frac{15\,a-8\,b\,n+15\,b\,\text{Log}[c\,x^n]}{8\,d^3\,x}-\frac{\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\left(15\,a-8\,b\,n+15\,b\,\text{Log}[c\,x^n]\right)}{8\,d^{7/2}}+\frac{15\,i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{16\,d^{7/2}}-\frac{15\,i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{16\,d^{7/2}}$$

Problem 359: Result valid but suboptimal antiderivative.

$$\int (f\,x)^{-1+m}\,\left(d+e\,x^m\right)^3\,\left(a+b\,\text{Log}[c\,x^n]\right)^2\,dx$$

Optimal (type 3, 372 leaves, 7 steps):

$$\frac{2\,b^2\,d^3\,n^2\,x\,(f\,x)^{-1+m}}{m^3}+\frac{3\,b^2\,d^2\,e\,n^2\,x^{1+m}\,(f\,x)^{-1+m}}{4\,m^3}+\frac{2\,b^2\,d\,e^2\,n^2\,x^{1+2\,m}\,(f\,x)^{-1+m}}{9\,m^3}+\frac{b^2\,e^3\,n^2\,x^{1+3\,m}\,(f\,x)^{-1+m}}{32\,m^3}+\frac{b^2\,d^4\,n^2\,x^{1-m}\,(f\,x)^{-1+m}\,\text{Log}[x]^2}{4\,e\,m}-\frac{2\,b\,d^3\,n\,x\,(f\,x)^{-1+m}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{m^2}-\frac{3\,b\,d^2\,e\,n\,x^{1+m}\,(f\,x)^{-1+m}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{2\,m^2}-\frac{2\,b\,d\,e^2\,n\,x^{1+2\,m}\,(f\,x)^{-1+m}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{3\,m^2}-\frac{b\,e^3\,n\,x^{1+3\,m}\,(f\,x)^{-1+m}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{8\,m^2}-\frac{b\,d^4\,n\,x^{1-m}\,(f\,x)^{-1+m}\,\text{Log}[x]\,\left(a+b\,\text{Log}[c\,x^n]\right)}{2\,e\,m}+\frac{x^{1-m}\,(f\,x)^{-1+m}\,\left(d+e\,x^m\right)^4\,\left(a+b\,\text{Log}[c\,x^n]\right)^2}{4\,e\,m}$$

Result (type 3, 294 leaves, 7 steps):

$$\frac{2\,b^2\,d^3\,n^2\,x\,(f\,x)^{-1+m}}{m^3}+\frac{3\,b^2\,d^2\,e\,n^2\,x^{1+m}\,(f\,x)^{-1+m}}{4\,m^3}+\frac{2\,b^2\,d\,e^2\,n^2\,x^{1+2\,m}\,(f\,x)^{-1+m}}{9\,m^3}+\frac{b^2\,e^3\,n^2\,x^{1+3\,m}\,(f\,x)^{-1+m}}{32\,m^3}+\frac{b^2\,d^4\,n^2\,x^{1-m}\,(f\,x)^{-1+m}\,\text{Log}[x]^2}{4\,e\,m}-\frac{1}{24\,e\,m}b\,n\,x^{1-m}\,(f\,x)^{-1+m}\left(\frac{48\,d^3\,e\,x^m}{m}+\frac{36\,d^2\,e^2\,x^{2\,m}}{m}+\frac{16\,d\,e^3\,x^{3\,m}}{m}+\frac{3\,e^4\,x^{4\,m}}{m}+12\,d^4\,\text{Log}[x]\right)\left(a+b\,\text{Log}[c\,x^n]\right)+\frac{x^{1-m}\,(f\,x)^{-1+m}\,\left(d+e\,x^m\right)^4\,\left(a+b\,\text{Log}[c\,x^n]\right)^2}{4\,e\,m}$$

Problem 360: Result valid but suboptimal antiderivative.

$$\int (f\,x)^{-1+m}\,\left(d+e\,x^m\right)^2\,\left(a+b\,\text{Log}[c\,x^n]\right)^2\,dx$$

Optimal (type 3, 298 leaves, 7 steps):

$$\frac{2 b^2 d^2 n^2 x (f x)^{-1+m}}{m^3}+\frac{b^2 d e n^2 x^{1+m} (f x)^{-1+m}}{2 m^3}+\frac{2 b^2 e^2 n^2 x^{1+2 m} (f x)^{-1+m}}{27 m^3}+\frac{b^2 d^3 n^2 x^{1-m} (f x)^{-1+m} \text{Log}[x]^2}{3 e m}-\frac{2 b d^2 n x (f x)^{-1+m} (a+b \text{Log}[c x^n])}{m^2}-\frac{b d e n x^{1+m} (f x)^{-1+m} (a+b \text{Log}[c x^n])}{m^2}-\frac{2 b e^2 n x^{1+2 m} (f x)^{-1+m} (a+b \text{Log}[c x^n])}{9 m^2}-\frac{2 b d^3 n x^{1-m} (f x)^{-1+m} \text{Log}[x] (a+b \text{Log}[c x^n])}{3 e m}+\frac{x^{1-m} (f x)^{-1+m} (d+e x^m)^3 (a+b \text{Log}[c x^n])^2}{3 e m}$$

Result (type 3, 245 leaves, 7 steps):

$$\frac{2 b^2 d^2 n^2 x (f x)^{-1+m}}{m^3}+\frac{b^2 d e n^2 x^{1+m} (f x)^{-1+m}}{2 m^3}+\frac{2 b^2 e^2 n^2 x^{1+2 m} (f x)^{-1+m}}{27 m^3}+\frac{b^2 d^3 n^2 x^{1-m} (f x)^{-1+m} \text{Log}[x]^2}{3 e m}-\frac{1}{9 e m} b n x^{1-m} (f x)^{-1+m} \left(\frac{18 d^2 e x^m}{m}+\frac{9 d e^2 x^{2 m}}{m}+\frac{2 e^3 x^{3 m}}{m}+6 d^3 \text{Log}[x]\right) (a+b \text{Log}[c x^n])+\frac{x^{1-m} (f x)^{-1+m} (d+e x^m)^3 (a+b \text{Log}[c x^n])^2}{3 e m}$$

Problem 361: Result valid but suboptimal antiderivative.

$$\int (f x)^{-1+m} (d+e x^m) (a+b \text{Log}[c x^n])^2 \, dx$$

Optimal (type 3, 226 leaves, 7 steps):

$$\frac{2 b^2 d n^2 x (f x)^{-1+m}}{m^3}+\frac{b^2 e n^2 x^{1+m} (f x)^{-1+m}}{4 m^3}+\frac{b^2 d^2 n^2 x^{1-m} (f x)^{-1+m} \text{Log}[x]^2}{2 e m}-\frac{2 b d n x (f x)^{-1+m} (a+b \text{Log}[c x^n])}{m^2}-\frac{b e n x^{1+m} (f x)^{-1+m} (a+b \text{Log}[c x^n])}{2 m^2}-\frac{b d^2 n x^{1-m} (f x)^{-1+m} \text{Log}[x] (a+b \text{Log}[c x^n])}{e m}+\frac{x^{1-m} (f x)^{-1+m} (d+e x^m)^2 (a+b \text{Log}[c x^n])^2}{2 e m}$$

Result (type 3, 195 leaves, 7 steps):

$$\frac{2 b^2 d n^2 x (f x)^{-1+m}}{m^3}+\frac{b^2 e n^2 x^{1+m} (f x)^{-1+m}}{4 m^3}+\frac{b^2 d^2 n^2 x^{1-m} (f x)^{-1+m} \text{Log}[x]^2}{2 e m}-\frac{b n x^{1-m} (f x)^{-1+m} \left(\frac{4 d e x^m}{m}+\frac{e^2 x^{2 m}}{m}+2 d^2 \text{Log}[x]\right) (a+b \text{Log}[c x^n])}{2 e m}+\frac{x^{1-m} (f x)^{-1+m} (d+e x^m)^2 (a+b \text{Log}[c x^n])^2}{2 e m}$$

Problem 371: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x^r)\,(a+b\,\mathrm{Log}[c\,x^n])}{x^3}\,dx$$

Optimal (type 3, 71 leaves, 4 steps):

$$-\frac{b\,d\,n}{4\,x^2}-\frac{b\,e\,n\,x^{-2+r}}{(2-r)^2}-\frac{d\,(a+b\,\mathrm{Log}[c\,x^n])}{2\,x^2}-\frac{e\,x^{-2+r}\,(a+b\,\mathrm{Log}[c\,x^n])}{2-r}$$

Result (type 3, 63 leaves, 2 steps):

$$-\frac{b\,d\,n}{4\,x^2}-\frac{b\,e\,n\,x^{-2+r}}{(2-r)^2}-\frac{1}{2}\left(\frac{d}{x^2}+\frac{2\,e\,x^{-2+r}}{2-r}\right)(a+b\,\mathrm{Log}[c\,x^n])$$

Problem 372: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x^r)\,(a+b\,\mathrm{Log}[c\,x^n])}{x^5}\,dx$$

Optimal (type 3, 71 leaves, 4 steps):

$$-\frac{b\,d\,n}{16\,x^4}-\frac{b\,e\,n\,x^{-4+r}}{(4-r)^2}-\frac{d\,(a+b\,\mathrm{Log}[c\,x^n])}{4\,x^4}-\frac{e\,x^{-4+r}\,(a+b\,\mathrm{Log}[c\,x^n])}{4-r}$$

Result (type 3, 63 leaves, 2 steps):

$$-\frac{b\,d\,n}{16\,x^4}-\frac{b\,e\,n\,x^{-4+r}}{(4-r)^2}-\frac{1}{4}\left(\frac{d}{x^4}+\frac{4\,e\,x^{-4+r}}{4-r}\right)(a+b\,\mathrm{Log}[c\,x^n])$$

Problem 375: Result valid but suboptimal antiderivative.

$$\int (d+e x^r)\,(a+b\,\mathrm{Log}[c\,x^n])\,dx$$

Optimal (type 3, 57 leaves, 3 steps):

$$-b\,d\,n\,x-\frac{b\,e\,n\,x^{1+r}}{(1+r)^2}+d\,x\,(a+b\,\mathrm{Log}[c\,x^n])+\frac{e\,x^{1+r}\,(a+b\,\mathrm{Log}[c\,x^n])}{1+r}$$

Result (type 3, 49 leaves, 3 steps):

$$-b\,d\,n\,x-\frac{b\,e\,n\,x^{1+r}}{(1+r)^2}+\left(d\,x+\frac{e\,x^{1+r}}{1+r}\right)(a+b\,\mathrm{Log}[c\,x^n])$$

Problem 376: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x^r)\,(a+b\,\mathrm{Log}[c\,x^n])}{x^2}\,dx$$

Optimal (type 3, 67 leaves, 4 steps):

$$-\frac{b\,d\,n}{x}-\frac{b\,e\,n\,x^{-1+r}}{(1-r)^2}-\frac{d\,(a+b\,\text{Log}[c\,x^n])}{x}-\frac{e\,x^{-1+r}\,(a+b\,\text{Log}[c\,x^n])}{1-r}$$

Result (type 3, 58 leaves, 4 steps):

$$-\frac{b\,d\,n}{x}-\frac{b\,e\,n\,x^{-1+r}}{(1-r)^2}-\left(\frac{d}{x}+\frac{e\,x^{-1+r}}{1-r}\right)(a+b\,\text{Log}[c\,x^n])$$

Problem 377: Result valid but suboptimal antiderivative.

$$\int\frac{(d+e\,x^r)\,(a+b\,\text{Log}[c\,x^n])}{x^4}\,dx$$

Optimal (type 3, 71 leaves, 4 steps):

$$-\frac{b\,d\,n}{9\,x^3}-\frac{b\,e\,n\,x^{-3+r}}{(3-r)^2}-\frac{d\,(a+b\,\text{Log}[c\,x^n])}{3\,x^3}-\frac{e\,x^{-3+r}\,(a+b\,\text{Log}[c\,x^n])}{3-r}$$

Result (type 3, 63 leaves, 2 steps):

$$-\frac{b\,d\,n}{9\,x^3}-\frac{b\,e\,n\,x^{-3+r}}{(3-r)^2}-\frac{1}{3}\left(\frac{d}{x^3}+\frac{3\,e\,x^{-3+r}}{3-r}\right)(a+b\,\text{Log}[c\,x^n])$$

Problem 378: Result valid but suboptimal antiderivative.

$$\int\frac{(d+e\,x^r)\,(a+b\,\text{Log}[c\,x^n])}{x^6}\,dx$$

Optimal (type 3, 71 leaves, 4 steps):

$$-\frac{b\,d\,n}{25\,x^5}-\frac{b\,e\,n\,x^{-5+r}}{(5-r)^2}-\frac{d\,(a+b\,\text{Log}[c\,x^n])}{5\,x^5}-\frac{e\,x^{-5+r}\,(a+b\,\text{Log}[c\,x^n])}{5-r}$$

Result (type 3, 63 leaves, 2 steps):

$$-\frac{b\,d\,n}{25\,x^5}-\frac{b\,e\,n\,x^{-5+r}}{(5-r)^2}-\frac{1}{5}\left(\frac{d}{x^5}+\frac{5\,e\,x^{-5+r}}{5-r}\right)(a+b\,\text{Log}[c\,x^n])$$

Problem 382: Result valid but suboptimal antiderivative.

$$\int\frac{(d+e\,x^r)^2\,(a+b\,\text{Log}[c\,x^n])}{x}\,dx$$

Optimal (type 3, 104 leaves, 5 steps):

$$-\frac{2\,b\,d\,e\,n\,x^r}{r^2}-\frac{b\,e^2\,n\,x^{2\,r}}{4\,r^2}-\frac{1}{2}\,b\,d^2\,n\,\text{Log}[x]^2+\\\frac{2\,d\,e\,x^r\,(a+b\,\text{Log}[c\,x^n])}{r}+\frac{e^2\,x^{2\,r}\,(a+b\,\text{Log}[c\,x^n])}{2\,r}+d^2\,\text{Log}[x]\,(a+b\,\text{Log}[c\,x^n])$$

Result (type 3, 87 leaves, 5 steps):

$$-\frac{2\,b\,d\,e\,n\,x^r}{r^2}-\frac{b\,e^2\,n\,x^{2\,r}}{4\,r^2}-\frac{1}{2}\,b\,d^2\,n\,\text{Log}[x]^2+\frac{1}{2}\left(\frac{4\,d\,e\,x^r}{r}+\frac{e^2\,x^{2\,r}}{r}+2\,d^2\,\text{Log}[x]\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 383: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e\,x^r\right)^2\,\left(a+b\,\text{Log}[c\,x^n]\right)}{x^3}\,dx$$

Optimal (type 3, 135 leaves, 4 steps):

$$-\frac{b\,d^2\,n}{4\,x^2}-\frac{b\,e^2\,n\,x^{-2\,(1-r)}}{4\,\left(1-r\right)^2}-\frac{2\,b\,d\,e\,n\,x^{-2+r}}{\left(2-r\right)^2}-\frac{d^2\,\left(a+b\,\text{Log}[c\,x^n]\right)}{2\,x^2}-\frac{e^2\,x^{-2\,(1-r)}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{2\,\left(1-r\right)}-\frac{2\,d\,e\,x^{-2+r}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{2-r}$$

Result (type 3, 114 leaves, 4 steps):

$$-\frac{b\,d^2\,n}{4\,x^2}-\frac{b\,e^2\,n\,x^{-2\,(1-r)}}{4\,\left(1-r\right)^2}-\frac{2\,b\,d\,e\,n\,x^{-2+r}}{\left(2-r\right)^2}-\frac{1}{2}\left(\frac{d^2}{x^2}+\frac{e^2\,x^{-2\,(1-r)}}{1-r}+\frac{4\,d\,e\,x^{-2+r}}{2-r}\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 384: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e\,x^r\right)^2\,\left(a+b\,\text{Log}[c\,x^n]\right)}{x^5}\,dx$$

Optimal (type 3, 135 leaves, 4 steps):

$$-\frac{b\,d^2\,n}{16\,x^4}-\frac{b\,e^2\,n\,x^{-2\,(2-r)}}{4\,\left(2-r\right)^2}-\frac{2\,b\,d\,e\,n\,x^{-4+r}}{(4-r)^2}-\frac{d^2\,\left(a+b\,\text{Log}[c\,x^n]\right)}{4\,x^4}-\frac{e^2\,x^{-2\,(2-r)}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{2\,\left(2-r\right)}-\frac{2\,d\,e\,x^{-4+r}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{4-r}$$

Result (type 3, 115 leaves, 4 steps):

$$-\frac{b\,d^2\,n}{16\,x^4}-\frac{b\,e^2\,n\,x^{-2\,(2-r)}}{4\,\left(2-r\right)^2}-\frac{2\,b\,d\,e\,n\,x^{-4+r}}{(4-r)^2}-\frac{1}{4}\left(\frac{d^2}{x^4}+\frac{2\,e^2\,x^{-2\,(2-r)}}{2-r}+\frac{8\,d\,e\,x^{-4+r}}{4-r}\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 387: Result valid but suboptimal antiderivative.

$$\int \left(d+e\,x^r\right)^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,dx$$

Optimal (type 3, 113 leaves, 2 steps):

$$-b\,d^2\,n\,x-\frac{2\,b\,d\,e\,n\,x^{1+r}}{\left(1+r\right)^2}-\frac{b\,e^2\,n\,x^{1+2\,r}}{\left(1+2\,r\right)^2}+d^2\,x\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)+\frac{2\,d\,e\,x^{1+r}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{1+r}+\frac{e^2\,x^{1+2\,r}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{1+2\,r}$$

Result (type 3, 95 leaves, 2 steps):

$$-b d^2 n x-\frac{2 b d e n x^{1+r}}{(1+r)^2}-\frac{b e^2 n x^{1+2 r}}{(1+2 r)^2}+\left(d^2 x+\frac{2 d e x^{1+r}}{1+r}+\frac{e^2 x^{1+2 r}}{1+2 r}\right)(a+b \operatorname{Log}[c x^n])$$

Problem 388: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x^r)^2 (a+b \operatorname{Log}[c x^n])}{x^2} \, dx$$

Optimal (type 3, 123 leaves, 3 steps):

$$-\frac{b d^2 n}{x}-\frac{2 b d e n x^{-1+r}}{(1-r)^2}-\frac{b e^2 n x^{-1+2 r}}{(1-2 r)^2}-\frac{d^2 (a+b \operatorname{Log}[c x^n])}{x}-\frac{2 d e x^{-1+r} (a+b \operatorname{Log}[c x^n])}{1-r}-\frac{e^2 x^{-1+2 r} (a+b \operatorname{Log}[c x^n])}{1-2 r}$$

Result (type 3, 104 leaves, 3 steps):

$$-\frac{b d^2 n}{x}-\frac{2 b d e n x^{-1+r}}{(1-r)^2}-\frac{b e^2 n x^{-1+2 r}}{(1-2 r)^2}-\left(\frac{d^2}{x}+\frac{2 d e x^{-1+r}}{1-r}+\frac{e^2 x^{-1+2 r}}{1-2 r}\right)(a+b \operatorname{Log}[c x^n])$$

Problem 389: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x^r)^2 (a+b \operatorname{Log}[c x^n])}{x^4} \, dx$$

Optimal (type 3, 127 leaves, 4 steps):

$$-\frac{b d^2 n}{9 x^3}-\frac{2 b d e n x^{-3+r}}{(3-r)^2}-\frac{b e^2 n x^{-3+2 r}}{(3-2 r)^2}-\frac{d^2 (a+b \operatorname{Log}[c x^n])}{3 x^3}-\frac{2 d e x^{-3+r} (a+b \operatorname{Log}[c x^n])}{3-r}-\frac{e^2 x^{-3+2 r} (a+b \operatorname{Log}[c x^n])}{3-2 r}$$

Result (type 3, 109 leaves, 4 steps):

$$-\frac{b d^2 n}{9 x^3}-\frac{2 b d e n x^{-3+r}}{(3-r)^2}-\frac{b e^2 n x^{-3+2 r}}{(3-2 r)^2}-\frac{1}{3}\left(\frac{d^2}{x^3}+\frac{6 d e x^{-3+r}}{3-r}+\frac{3 e^2 x^{-3+2 r}}{3-2 r}\right)(a+b \operatorname{Log}[c x^n])$$

Problem 390: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x^r)^2 (a+b \operatorname{Log}[c x^n])}{x^6} \, dx$$

Optimal (type 3, 127 leaves, 4 steps):

$$-\frac{b d^2 n}{25 x^5}-\frac{2 b d e n x^{-5+r}}{(5-r)^2}-\frac{b e^2 n x^{-5+2 r}}{(5-2 r)^2}-\frac{d^2 \left(a+b \text{Log}\left[c x^n\right]\right)}{5 x^5}-\frac{2 d e x^{-5+r} \left(a+b \text{Log}\left[c x^n\right]\right)}{5-r}-\frac{e^2 x^{-5+2 r} \left(a+b \text{Log}\left[c x^n\right]\right)}{5-2 r}$$

Result (type 3, 109 leaves, 4 steps):

$$-\frac{b d^2 n}{25 x^5}-\frac{2 b d e n x^{-5+r}}{(5-r)^2}-\frac{b e^2 n x^{-5+2 r}}{(5-2 r)^2}-\frac{1}{5} \left(\frac{d^2}{x^5}+\frac{10 d e x^{-5+r}}{5-r}+\frac{5 e^2 x^{-5+2 r}}{5-2 r}\right) \left(a+b \text{Log}\left[c x^n\right]\right)$$

Problem 391: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x^r)^2 \left(a+b \text{Log}\left[c x^n\right]\right)}{x^8} \, dx$$

Optimal (type 3, 127 leaves, 4 steps):

$$-\frac{b d^2 n}{49 x^7}-\frac{2 b d e n x^{-7+r}}{(7-r)^2}-\frac{b e^2 n x^{-7+2 r}}{(7-2 r)^2}-\frac{d^2 \left(a+b \text{Log}\left[c x^n\right]\right)}{7 x^7}-\frac{2 d e x^{-7+r} \left(a+b \text{Log}\left[c x^n\right]\right)}{7-r}-\frac{e^2 x^{-7+2 r} \left(a+b \text{Log}\left[c x^n\right]\right)}{7-2 r}$$

Result (type 3, 109 leaves, 4 steps):

$$-\frac{b d^2 n}{49 x^7}-\frac{2 b d e n x^{-7+r}}{(7-r)^2}-\frac{b e^2 n x^{-7+2 r}}{(7-2 r)^2}-\frac{1}{7} \left(\frac{d^2}{x^7}+\frac{14 d e x^{-7+r}}{7-r}+\frac{7 e^2 x^{-7+2 r}}{7-2 r}\right) \left(a+b \text{Log}\left[c x^n\right]\right)$$

Problem 395: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x^r)^3 \left(a+b \text{Log}\left[c x^n\right]\right)}{x} \, dx$$

Optimal (type 3, 152 leaves, 5 steps):

$$-\frac{3 b d^2 e n x^r}{r^2}-\frac{3 b d e^2 n x^{2 r}}{4 r^2}-\frac{b e^3 n x^{3 r}}{9 r^2}-\frac{1}{2} b d^3 n \text{Log}[x]^2+\frac{3 d^2 e x^r \left(a+b \text{Log}\left[c x^n\right]\right)}{r}+\frac{3 d e^2 x^{2 r} \left(a+b \text{Log}\left[c x^n\right]\right)}{2 r}+\frac{e^3 x^{3 r} \left(a+b \text{Log}\left[c x^n\right]\right)}{3 r}+d^3 \text{Log}[x] \left(a+b \text{Log}\left[c x^n\right]\right)$$

Result (type 3, 124 leaves, 5 steps):

$$-\frac{3 b d^2 e n x^r}{r^2}-\frac{3 b d e^2 n x^{2 r}}{4 r^2}-\frac{b e^3 n x^{3 r}}{9 r^2}-\frac{1}{2} b d^3 n \text{Log}[x]^2+\frac{1}{6} \left(\frac{18 d^2 e x^r}{r}+\frac{9 d e^2 x^{2 r}}{r}+\frac{2 e^3 x^{3 r}}{r}+6 d^3 \text{Log}[x]\right) \left(a+b \text{Log}\left[c x^n\right]\right)$$

Problem 396: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e\,x^r\right)^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^3}\,dx$$

Optimal (type 3, 191 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{4\,x^2}-\frac{3\,b\,d\,e^2\,n\,x^{-2\,(1-r)}}{4\,\left(1-r\right)^2}-\frac{3\,b\,d^2\,e\,n\,x^{-2+r}}{\left(2-r\right)^2}-\frac{b\,e^3\,n\,x^{-2+3\,r}}{\left(2-3\,r\right)^2}-\frac{d^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2\,x^2}-\frac{3\,d\,e^2\,x^{-2\,(1-r)}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2\,\left(1-r\right)}-\frac{3\,d^2\,e\,x^{-2+r}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2-r}-\frac{e^3\,x^{-2+3\,r}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2-3\,r}$$

Result (type 3, 161 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{4\,x^2}-\frac{3\,b\,d\,e^2\,n\,x^{-2\,(1-r)}}{4\,\left(1-r\right)^2}-\frac{3\,b\,d^2\,e\,n\,x^{-2+r}}{\left(2-r\right)^2}-\frac{b\,e^3\,n\,x^{-2+3\,r}}{\left(2-3\,r\right)^2}-\frac{1}{2}\left(\frac{d^3}{x^2}+\frac{3\,d\,e^2\,x^{-2\,(1-r)}}{1-r}+\frac{6\,d^2\,e\,x^{-2+r}}{2-r}+\frac{2\,e^3\,x^{-2+3\,r}}{2-3\,r}\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 397: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e\,x^r\right)^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^5}\,dx$$

Optimal (type 3, 191 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{16\,x^4}-\frac{3\,b\,d\,e^2\,n\,x^{-2\,(2-r)}}{4\,\left(2-r\right)^2}-\frac{3\,b\,d^2\,e\,n\,x^{-4+r}}{\left(4-r\right)^2}-\frac{b\,e^3\,n\,x^{-4+3\,r}}{\left(4-3\,r\right)^2}-\frac{d^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{4\,x^4}-\frac{3\,d\,e^2\,x^{-2\,(2-r)}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2\,\left(2-r\right)}-\frac{3\,d^2\,e\,x^{-4+r}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{4-r}-\frac{e^3\,x^{-4+3\,r}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{4-3\,r}$$

Result (type 3, 161 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{16\,x^4}-\frac{3\,b\,d\,e^2\,n\,x^{-2\,(2-r)}}{4\,\left(2-r\right)^2}-\frac{3\,b\,d^2\,e\,n\,x^{-4+r}}{\left(4-r\right)^2}-\frac{b\,e^3\,n\,x^{-4+3\,r}}{\left(4-3\,r\right)^2}-\frac{1}{4}\left(\frac{d^3}{x^4}+\frac{6\,d\,e^2\,x^{-2\,(2-r)}}{2-r}+\frac{12\,d^2\,e\,x^{-4+r}}{4-r}+\frac{4\,e^3\,x^{-4+3\,r}}{4-3\,r}\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)$$

Problem 400: Result valid but suboptimal antiderivative.

$$\int \left(d+e\,x^r\right)^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,dx$$

Optimal (type 3, 169 leaves, 2 steps):

$$-b d^3 n x-\frac{3 b d^2 e n x^{1+r}}{(1+r)^2}-\frac{3 b d e^2 n x^{1+2 r}}{(1+2 r)^2}-\frac{b e^3 n x^{1+3 r}}{(1+3 r)^2}+d^3 x\left(a+b \operatorname{Log}\left[c x^n\right]\right)+$$
$$\frac{3 d^2 e x^{1+r}\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{1+r}+\frac{3 d e^2 x^{1+2 r}\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{1+2 r}+\frac{e^3 x^{1+3 r}\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{1+3 r}$$

Result (type 3, 141 leaves, 2 steps):

$$-b d^3 n x-\frac{3 b d^2 e n x^{1+r}}{(1+r)^2}-\frac{3 b d e^2 n x^{1+2 r}}{(1+2 r)^2}-\frac{b e^3 n x^{1+3 r}}{(1+3 r)^2}+$$
$$\left(d^3 x+\frac{3 d^2 e x^{1+r}}{1+r}+\frac{3 d e^2 x^{1+2 r}}{1+2 r}+\frac{e^3 x^{1+3 r}}{1+3 r}\right)\left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 401: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^r\right)^3\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^2}\,dx$$

Optimal (type 3, 179 leaves, 3 steps):

$$-\frac{b d^3 n}{x}-\frac{3 b d^2 e n x^{-1+r}}{(1-r)^2}-\frac{3 b d e^2 n x^{-1+2 r}}{(1-2 r)^2}-\frac{b e^3 n x^{-1+3 r}}{(1-3 r)^2}-\frac{d^3\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x}-$$
$$\frac{3 d^2 e x^{-1+r}\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{1-r}-\frac{3 d e^2 x^{-1+2 r}\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{1-2 r}-\frac{e^3 x^{-1+3 r}\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{1-3 r}$$

Result (type 3, 150 leaves, 3 steps):

$$-\frac{b d^3 n}{x}-\frac{3 b d^2 e n x^{-1+r}}{(1-r)^2}-\frac{3 b d e^2 n x^{-1+2 r}}{(1-2 r)^2}-\frac{b e^3 n x^{-1+3 r}}{(1-3 r)^2}-$$
$$\left(\frac{d^3}{x}+\frac{3 d^2 e x^{-1+r}}{1-r}+\frac{3 d e^2 x^{-1+2 r}}{1-2 r}+\frac{e^3 x^{-1+3 r}}{1-3 r}\right)\left(a+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 402: Result valid but suboptimal antiderivative.

$$\int \frac{\left(d+e x^r\right)^3\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^4}\,dx$$

Optimal (type 3, 191 leaves, 4 steps):

$$-\frac{b d^3 n}{9 x^3}-\frac{b e^3 n x^{-3(1-r)}}{9(1-r)^2}-\frac{3 b d^2 e n x^{-3+r}}{(3-r)^2}-\frac{3 b d e^2 n x^{-3+2 r}}{(3-2 r)^2}-\frac{d^3\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 x^3}-$$
$$\frac{e^3 x^{-3(1-r)}\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3(1-r)}-\frac{3 d^2 e x^{-3+r}\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3-r}-\frac{3 d e^2 x^{-3+2 r}\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3-2 r}$$

Result (type 3, 160 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{9\,x^3}-\frac{b\,e^3\,n\,x^{-3\,(1-r)}}{9\,(1-r)^2}-\frac{3\,b\,d^2\,e\,n\,x^{-3+r}}{(3-r)^2}-\frac{3\,b\,d\,e^2\,n\,x^{-3+2\,r}}{(3-2\,r)^2}-\frac{1}{3}\left(\frac{d^3}{x^3}+\frac{e^3\,x^{-3\,(1-r)}}{1-r}+\frac{9\,d^2\,e\,x^{-3+r}}{3-r}+\frac{9\,d\,e^2\,x^{-3+2\,r}}{3-2\,r}\right)\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)$$

Problem 403: Result valid but suboptimal antiderivative.

$$\int\frac{\left(d+e\,x^r\right)^3\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)}{x^6}\,dx$$

Optimal (type 3, 183 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{25\,x^5}-\frac{3\,b\,d^2\,e\,n\,x^{-5+r}}{(5-r)^2}-\frac{3\,b\,d\,e^2\,n\,x^{-5+2\,r}}{(5-2\,r)^2}-\frac{b\,e^3\,n\,x^{-5+3\,r}}{(5-3\,r)^2}-\frac{d^3\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)}{5\,x^5}-\frac{3\,d^2\,e\,x^{-5+r}\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)}{5-r}-\frac{3\,d\,e^2\,x^{-5+2\,r}\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)}{5-2\,r}-\frac{e^3\,x^{-5+3\,r}\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)}{5-3\,r}$$

Result (type 3, 155 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{25\,x^5}-\frac{3\,b\,d^2\,e\,n\,x^{-5+r}}{(5-r)^2}-\frac{3\,b\,d\,e^2\,n\,x^{-5+2\,r}}{(5-2\,r)^2}-\frac{b\,e^3\,n\,x^{-5+3\,r}}{(5-3\,r)^2}-\frac{1}{5}\left(\frac{d^3}{x^5}+\frac{15\,d^2\,e\,x^{-5+r}}{5-r}+\frac{15\,d\,e^2\,x^{-5+2\,r}}{5-2\,r}+\frac{5\,e^3\,x^{-5+3\,r}}{5-3\,r}\right)\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)$$

Problem 404: Result valid but suboptimal antiderivative.

$$\int\frac{\left(d+e\,x^r\right)^3\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)}{x^8}\,dx$$

Optimal (type 3, 183 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{49\,x^7}-\frac{3\,b\,d^2\,e\,n\,x^{-7+r}}{(7-r)^2}-\frac{3\,b\,d\,e^2\,n\,x^{-7+2\,r}}{(7-2\,r)^2}-\frac{b\,e^3\,n\,x^{-7+3\,r}}{(7-3\,r)^2}-\frac{d^3\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)}{7\,x^7}-\frac{3\,d^2\,e\,x^{-7+r}\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)}{7-r}-\frac{3\,d\,e^2\,x^{-7+2\,r}\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)}{7-2\,r}-\frac{e^3\,x^{-7+3\,r}\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)}{7-3\,r}$$

Result (type 3, 155 leaves, 4 steps):

$$-\frac{b\,d^3\,n}{49\,x^7}-\frac{3\,b\,d^2\,e\,n\,x^{-7+r}}{(7-r)^2}-\frac{3\,b\,d\,e^2\,n\,x^{-7+2\,r}}{(7-2\,r)^2}-\frac{b\,e^3\,n\,x^{-7+3\,r}}{(7-3\,r)^2}-\frac{1}{7}\left(\frac{d^3}{x^7}+\frac{21\,d^2\,e\,x^{-7+r}}{7-r}+\frac{21\,d\,e^2\,x^{-7+2\,r}}{7-2\,r}+\frac{7\,e^3\,x^{-7+3\,r}}{7-3\,r}\right)\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)$$

Problem 405: Result valid but suboptimal antiderivative.

$$\int\frac{\left(d+e\,x^r\right)^3\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)}{x^{10}}\,dx$$

Optimal (type 3, 191 leaves, 4 steps):

$$-\frac{b d^3 n}{81 x^9}-\frac{b e^3 n x^{-3 (3-r)}}{9 (3-r)^2}-\frac{3 b d^2 e n x^{-9+r}}{(9-r)^2}-\frac{3 b d e^2 n x^{-9+2 r}}{(9-2 r)^2}-\frac{d^3 (a+b \text{Log}[c x^n])}{9 x^9}-\frac{e^3 x^{-3 (3-r)} (a+b \text{Log}[c x^n])}{3 (3-r)}-\frac{3 d^2 e x^{-9+r} (a+b \text{Log}[c x^n])}{9-r}-\frac{3 d e^2 x^{-9+2 r} (a+b \text{Log}[c x^n])}{9-2 r}$$

Result (type 3, 161 leaves, 4 steps):

$$-\frac{b d^3 n}{81 x^9}-\frac{b e^3 n x^{-3 (3-r)}}{9 (3-r)^2}-\frac{3 b d^2 e n x^{-9+r}}{(9-r)^2}-\frac{3 b d e^2 n x^{-9+2 r}}{(9-2 r)^2}-\frac{1}{9}\left(\frac{d^3}{x^9}+\frac{3 e^3 x^{-3 (3-r)}}{3-r}+\frac{27 d^2 e x^{-9+r}}{9-r}+\frac{27 d e^2 x^{-9+2 r}}{9-2 r}\right) (a+b \text{Log}[c x^n])$$

Problem 421: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x^r)^3 (a+b \text{Log}[c x^n])}{x} \, dx$$

Optimal (type 3, 152 leaves, 5 steps):

$$-\frac{3 b d^2 e n x^r}{r^2}-\frac{3 b d e^2 n x^{2 r}}{4 r^2}-\frac{b e^3 n x^{3 r}}{9 r^2}-\frac{1}{2} b d^3 n \text{Log}[x]^2+\frac{3 d^2 e x^r (a+b \text{Log}[c x^n])}{r}+\frac{3 d e^2 x^{2 r} (a+b \text{Log}[c x^n])}{2 r}+\frac{e^3 x^{3 r} (a+b \text{Log}[c x^n])}{3 r}+d^3 \text{Log}[x] (a+b \text{Log}[c x^n])$$

Result (type 3, 124 leaves, 5 steps):

$$-\frac{3 b d^2 e n x^r}{r^2}-\frac{3 b d e^2 n x^{2 r}}{4 r^2}-\frac{b e^3 n x^{3 r}}{9 r^2}-\frac{1}{2} b d^3 n \text{Log}[x]^2+\frac{1}{6}\left(\frac{18 d^2 e x^r}{r}+\frac{9 d e^2 x^{2 r}}{r}+\frac{2 e^3 x^{3 r}}{r}+6 d^3 \text{Log}[x]\right) (a+b \text{Log}[c x^n])$$

Problem 422: Result valid but suboptimal antiderivative.

$$\int \frac{(d+e x^r)^2 (a+b \text{Log}[c x^n])}{x} \, dx$$

Optimal (type 3, 104 leaves, 5 steps):

$$-\frac{2 b d e n x^r}{r^2}-\frac{b e^2 n x^{2 r}}{4 r^2}-\frac{1}{2} b d^2 n \text{Log}[x]^2+\frac{2 d e x^r (a+b \text{Log}[c x^n])}{r}+\frac{e^2 x^{2 r} (a+b \text{Log}[c x^n])}{2 r}+d^2 \text{Log}[x] (a+b \text{Log}[c x^n])$$

Result (type 3, 87 leaves, 5 steps):

$$-\frac{2 b d e n x^r}{r^2}-\frac{b e^2 n x^{2 r}}{4 r^2}-\frac{1}{2} b d^2 n \text{Log}[x]^2+\frac{1}{2}\left(\frac{4 d e x^r}{r}+\frac{e^2 x^{2 r}}{r}+2 d^2 \text{Log}[x]\right) (a+b \text{Log}[c x^n])$$

Problem 454: Result valid but suboptimal antiderivative.

$$\int \frac{(f+g x)\,(a+b \operatorname{Log}[c x^n])}{(d+e x)^3}\,dx$$

Optimal (type 3, 115 leaves, 3 steps):

$$\frac{b\,(e f-d g)\,n}{2 d e^2\,(d+e x)}+\frac{b f^2 n \operatorname{Log}[x]}{2 d^2\,(e f-d g)}-\frac{(f+g x)^2\,(a+b \operatorname{Log}[c x^n])}{2\,(e f-d g)\,(d+e x)^2}-\frac{b\,(e f+d g)\,n \operatorname{Log}[d+e x]}{2 d^2 e^2}$$

Result (type 3, 151 leaves, 7 steps):

$$\frac{b\,(e f-d g)\,n}{2 d e^2\,(d+e x)}+\frac{b\,(e f-d g)\,n \operatorname{Log}[x]}{2 d^2 e^2}-\frac{(e f-d g)\,(a+b \operatorname{Log}[c x^n])}{2 e^2\,(d+e x)^2}+\frac{g x\,(a+b \operatorname{Log}[c x^n])}{d e\,(d+e x)}-\frac{b g n \operatorname{Log}[d+e x]}{d e^2}-\frac{b\,(e f-d g)\,n \operatorname{Log}[d+e x]}{2 d^2 e^2}$$

Problem 455: Result valid but suboptimal antiderivative.

$$\int \frac{(f+g x)\,(a+b \operatorname{Log}[c x^n])^2}{(d+e x)^3}\,dx$$

Optimal (type 4, 202 leaves, 8 steps):

$$-\frac{b\,(e f-d g)\,n x\,(a+b \operatorname{Log}[c x^n])}{d^2 e\,(d+e x)}+\frac{f^2\,(a+b \operatorname{Log}[c x^n])^2}{2 d^2\,(e f-d g)}-\frac{(f+g x)^2\,(a+b \operatorname{Log}[c x^n])^2}{2\,(e f-d g)\,(d+e x)^2}+\frac{b^2\,(e f-d g)\,n^2 \operatorname{Log}[d+e x]}{d^2 e^2}-\frac{b\,(e f+d g)\,n\,(a+b \operatorname{Log}[c x^n])\,\operatorname{Log}\left[1+\frac{e x}{d}\right]}{d^2 e^2}-\frac{b^2\,(e f+d g)\,n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^2 e^2}$$

Result (type 4, 278 leaves, 13 steps):

$$-\frac{b\,(e f-d g)\,n x\,(a+b \operatorname{Log}[c x^n])}{d^2 e\,(d+e x)}+\frac{(e f-d g)\,(a+b \operatorname{Log}[c x^n])^2}{2 d^2 e^2}-\frac{(e f-d g)\,(a+b \operatorname{Log}[c x^n])^2}{2 e^2\,(d+e x)^2}+\frac{g x\,(a+b \operatorname{Log}[c x^n])^2}{d e\,(d+e x)}+\frac{b^2\,(e f-d g)\,n^2 \operatorname{Log}[d+e x]}{d^2 e^2}-\frac{2 b g n\,(a+b \operatorname{Log}[c x^n])\,\operatorname{Log}\left[1+\frac{e x}{d}\right]}{d e^2}-\frac{b\,(e f-d g)\,n\,(a+b \operatorname{Log}[c x^n])\,\operatorname{Log}\left[1+\frac{e x}{d}\right]}{d^2 e^2}-\frac{2 b^2 g n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d e^2}-\frac{b^2\,(e f-d g)\,n^2 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^2 e^2}$$

Problem 456: Result valid but suboptimal antiderivative.

$$\int \frac{(f+g x)\,(a+b \operatorname{Log}[c x^n])^3}{(d+e x)^3}\,dx$$

Optimal (type 4, 295 leaves, 11 steps):

$$-\frac{3 b (e f-d g) n x (a+b \operatorname{Log}[c x^n])^2}{2 d^2 e (d+e x)}+\frac{f^2 (a+b \operatorname{Log}[c x^n])^3}{2 d^2 (e f-d g)}-\frac{(f+g x)^2 (a+b \operatorname{Log}[c x^n])^3}{2 (e f-d g) (d+e x)^2}+\frac{3 b^2 (e f-d g) n^2 (a+b \operatorname{Log}[c x^n]) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{d^2 e^2}-\frac{3 b (e f+d g) n (a+b \operatorname{Log}[c x^n])^2 \operatorname{Log}\left[1+\frac{e x}{d}\right]}{2 d^2 e^2}+\frac{3 b^3 (e f-d g) n^3 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^2 e^2}-\frac{3 b^2 (e f+d g) n^2 (a+b \operatorname{Log}[c x^n]) \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^2 e^2}+\frac{3 b^3 (e f+d g) n^3 \operatorname{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^2 e^2}$$

Result (type 4, 408 leaves, 17 steps):

$$-\frac{3 b (e f-d g) n x (a+b \operatorname{Log}[c x^n])^2}{2 d^2 e (d+e x)}+\frac{(e f-d g) (a+b \operatorname{Log}[c x^n])^3}{2 d^2 e^2}-\frac{(e f-d g) (a+b \operatorname{Log}[c x^n])^3}{2 e^2 (d+e x)^2}+\frac{g x (a+b \operatorname{Log}[c x^n])^3}{d e (d+e x)}+\frac{3 b^2 (e f-d g) n^2 (a+b \operatorname{Log}[c x^n]) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{d^2 e^2}-\frac{3 b g n (a+b \operatorname{Log}[c x^n])^2 \operatorname{Log}\left[1+\frac{e x}{d}\right]}{d e^2}-\frac{3 b (e f-d g) n (a+b \operatorname{Log}[c x^n])^2 \operatorname{Log}\left[1+\frac{e x}{d}\right]}{2 d^2 e^2}+\frac{3 b^3 (e f-d g) n^3 \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^2 e^2}-\frac{6 b^2 g n^2 (a+b \operatorname{Log}[c x^n]) \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d e^2}-\frac{3 b^2 (e f-d g) n^2 (a+b \operatorname{Log}[c x^n]) \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{d^2 e^2}+\frac{6 b^3 g n^3 \operatorname{PolyLog}\left[3,-\frac{e x}{d}\right]}{d e^2}+\frac{3 b^3 (e f-d g) n^3 \operatorname{PolyLog}\left[3,-\frac{e x}{d}\right]}{d^2 e^2}$$

Test results for the 249 problems in "3.1.5 u (a+b log(c x^n))^p.m"

Problem 15: Result valid but suboptimal antiderivative.

$$\int \frac{(a+b \operatorname{Log}[c x^n])^2 \operatorname{Log}[1+e x]}{x^2}\,dx$$

Optimal (type 4, 203 leaves, 10 steps):

$$2\,b^2\,e\,n^2\,\text{Log}[x] - 2\,b\,e\,n\,\text{Log}\left[1+\frac{1}{e\,x}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right) - e\,\text{Log}\left[1+\frac{1}{e\,x}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2 - 2\,b^2\,e\,n^2\,\text{Log}[1+e\,x] - \frac{2\,b^2\,n^2\,\text{Log}[1+e\,x]}{x} - \frac{2\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}[1+e\,x]}{x} - \frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}[1+e\,x]}{x} + 2\,b^2\,e\,n^2\,\text{PolyLog}\left[2,-\frac{1}{e\,x}\right] + 2\,b\,e\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,-\frac{1}{e\,x}\right] + 2\,b^2\,e\,n^2\,\text{PolyLog}\left[3,-\frac{1}{e\,x}\right]$$

Result (type 4, 220 leaves, 15 steps):

$$2\,b^2\,e\,n^2\,\text{Log}[x] + e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2 + \frac{e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{3\,b\,n} - 2\,b^2\,e\,n^2\,\text{Log}[1+e\,x] - \frac{2\,b^2\,n^2\,\text{Log}[1+e\,x]}{x} - 2\,b\,e\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}[1+e\,x] - \frac{2\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}[1+e\,x]}{x} - e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}[1+e\,x] - \frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}[1+e\,x]}{x} - 2\,b^2\,e\,n^2\,\text{PolyLog}[2,-e\,x] - 2\,b\,e\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}[2,-e\,x] + 2\,b^2\,e\,n^2\,\text{PolyLog}[3,-e\,x]$$

Problem 16: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}[1+e\,x]}{x^3}\,dx$$

Optimal (type 4, 287 leaves, 14 steps):

$$-\frac{7\,b^2\,e\,n^2}{4\,x} - \frac{1}{4}\,b^2\,e^2\,n^2\,\text{Log}[x] - \frac{3\,b\,e\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2\,x} + \frac{1}{2}\,b\,e^2\,n\,\text{Log}\left[1+\frac{1}{e\,x}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right) - \frac{e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{2\,x} + \frac{1}{2}\,e^2\,\text{Log}\left[1+\frac{1}{e\,x}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2 + \frac{1}{4}\,b^2\,e^2\,n^2\,\text{Log}[1+e\,x] - \frac{b^2\,n^2\,\text{Log}[1+e\,x]}{4\,x^2} - \frac{b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}[1+e\,x]}{2\,x^2} - \frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}[1+e\,x]}{2\,x^2} - \frac{1}{2}\,b^2\,e^2\,n^2\,\text{PolyLog}\left[2,-\frac{1}{e\,x}\right] - b\,e^2\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,-\frac{1}{e\,x}\right] - b^2\,e^2\,n^2\,\text{PolyLog}\left[3,-\frac{1}{e\,x}\right]$$

Result (type 4, 310 leaves, 19 steps):

$$-\frac{7\,b^2\,e\,n^2}{4\,x} - \frac{1}{4}\,b^2\,e^2\,n^2\,\text{Log}[x] - \frac{3\,b\,e\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2\,x} - \frac{1}{4}\,e^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2 - \frac{e\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{2\,x} - \frac{e^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{6\,b\,n} + \frac{1}{4}\,b^2\,e^2\,n^2\,\text{Log}[1+e\,x] - \frac{b^2\,n^2\,\text{Log}[1+e\,x]}{4\,x^2} + \frac{1}{2}\,b\,e^2\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}[1+e\,x] - \frac{b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}[1+e\,x]}{2\,x^2} + \frac{1}{2}\,e^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}[1+e\,x] - \frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}[1+e\,x]}{2\,x^2} + \frac{1}{2}\,b^2\,e^2\,n^2\,\text{PolyLog}[2,-e\,x] + b\,e^2\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}[2,-e\,x] - b^2\,e^2\,n^2\,\text{PolyLog}[3,-e\,x]$$

Problem 22: Result valid but suboptimal antiderivative.

$$\int \frac{(a+b\,\mathrm{Log}[c\,x^n])^3\,\mathrm{Log}[1+e\,x]}{x^2}\,dx$$

Optimal (type 4, 342 leaves, 14 steps):

$$6\,b^3\,e\,n^3\,\mathrm{Log}[x]-6\,b^2\,e\,n^2\,\mathrm{Log}\left[1+\frac{1}{e\,x}\right]\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)-3\,b\,e\,n\,\mathrm{Log}\left[1+\frac{1}{e\,x}\right]\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)^2-e\,\mathrm{Log}\left[1+\frac{1}{e\,x}\right]\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)^3-6\,b^3\,e\,n^3\,\mathrm{Log}[1+e\,x]-\frac{6\,b^3\,n^3\,\mathrm{Log}[1+e\,x]}{x}-\frac{6\,b^2\,n^2\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}[1+e\,x]}{x}-\frac{3\,b\,n\,(a+b\,\mathrm{Log}[c\,x^n])^2\,\mathrm{Log}[1+e\,x]}{x}-\frac{(a+b\,\mathrm{Log}[c\,x^n])^3\,\mathrm{Log}[1+e\,x]}{x}+6\,b^3\,e\,n^3\,\mathrm{PolyLog}\left[2,-\frac{1}{e\,x}\right]+6\,b^2\,e\,n^2\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)\mathrm{PolyLog}\left[2,-\frac{1}{e\,x}\right]+3\,b\,e\,n\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)^2\mathrm{PolyLog}\left[2,-\frac{1}{e\,x}\right]+6\,b^3\,e\,n^3\,\mathrm{PolyLog}\left[3,-\frac{1}{e\,x}\right]+6\,b^2\,e\,n^2\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)\mathrm{PolyLog}\left[3,-\frac{1}{e\,x}\right]+6\,b^3\,e\,n^3\,\mathrm{PolyLog}\left[4,-\frac{1}{e\,x}\right]$$

Result (type 4, 360 leaves, 22 steps):

$$6\,b^3\,e\,n^3\,\mathrm{Log}[x]+3\,b\,e\,n\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)^2+e\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)^3+\frac{e\,(a+b\,\mathrm{Log}[c\,x^n])^4}{4\,b\,n}-6\,b^3\,e\,n^3\,\mathrm{Log}[1+e\,x]-\frac{6\,b^3\,n^3\,\mathrm{Log}[1+e\,x]}{x}-6\,b^2\,e\,n^2\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)\mathrm{Log}[1+e\,x]-\frac{6\,b^2\,n^2\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}[1+e\,x]}{x}-3\,b\,e\,n\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)^2\mathrm{Log}[1+e\,x]-\frac{3\,b\,n\,(a+b\,\mathrm{Log}[c\,x^n])^2\,\mathrm{Log}[1+e\,x]}{x}-e\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)^3\mathrm{Log}[1+e\,x]-\frac{(a+b\,\mathrm{Log}[c\,x^n])^3\,\mathrm{Log}[1+e\,x]}{x}-6\,b^3\,e\,n^3\,\mathrm{PolyLog}[2,-e\,x]-6\,b^2\,e\,n^2\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)\mathrm{PolyLog}[2,-e\,x]-3\,b\,e\,n\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)^2\mathrm{PolyLog}[2,-e\,x]+6\,b^3\,e\,n^3\,\mathrm{PolyLog}[3,-e\,x]+6\,b^2\,e\,n^2\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)\mathrm{PolyLog}[3,-e\,x]-6\,b^3\,e\,n^3\,\mathrm{PolyLog}[4,-e\,x]$$

Problem 23: Result valid but suboptimal antiderivative.

$$\int \frac{(a+b\,\mathrm{Log}[c\,x^n])^3\,\mathrm{Log}[1+e\,x]}{x^3}\,dx$$

Optimal (type 4, 470 leaves, 22 steps):

$$-\frac{45 b^3 e n^3}{8 x}-\frac{3}{8} b^3 e^2 n^3 \operatorname{Log}[x]-\frac{21 b^2 e n^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{4 x}+\frac{3}{4} b^2 e^2 n^2 \operatorname{Log}\left[1+\frac{1}{e x}\right] \left(a+b \operatorname{Log}\left[c x^n\right]\right)-\frac{9 b e n \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{4 x}+\frac{3}{4} b e^2 n \operatorname{Log}\left[1+\frac{1}{e x}\right] \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2-\frac{e \left(a+b \operatorname{Log}\left[c x^n\right]\right)^3}{2 x}+\frac{1}{2} e^2 \operatorname{Log}\left[1+\frac{1}{e x}\right] \left(a+b \operatorname{Log}\left[c x^n\right]\right)^3+\frac{3}{8} b^3 e^2 n^3 \operatorname{Log}[1+e x]-\frac{3 b^3 n^3 \operatorname{Log}[1+e x]}{8 x^2}-\frac{3 b^2 n^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}[1+e x]}{4 x^2}-\frac{3 b n \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}[1+e x]}{4 x^2}-\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^3 \operatorname{Log}[1+e x]}{2 x^2}-\frac{3}{4} b^3 e^2 n^3 \operatorname{PolyLog}\left[2,-\frac{1}{e x}\right]-\frac{3}{2} b^2 e^2 n^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{1}{e x}\right]-\frac{3}{2} b e^2 n \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{PolyLog}\left[2,-\frac{1}{e x}\right]-\frac{3}{2} b^3 e^2 n^3 \operatorname{PolyLog}\left[3,-\frac{1}{e x}\right]-3 b^2 e^2 n^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[3,-\frac{1}{e x}\right]-3 b^3 e^2 n^3 \operatorname{PolyLog}\left[4,-\frac{1}{e x}\right]$$

Result (type 4, 499 leaves, 30 steps):

$$-\frac{45 b^3 e n^3}{8 x}-\frac{3}{8} b^3 e^2 n^3 \operatorname{Log}[x]-\frac{21 b^2 e n^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{4 x}-\frac{3}{8} b e^2 n \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2-\frac{9 b e n \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2}{4 x}-\frac{1}{4} e^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^3-\frac{e \left(a+b \operatorname{Log}\left[c x^n\right]\right)^3}{2 x}-\frac{e^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^4}{8 b n}+\frac{3}{8} b^3 e^2 n^3 \operatorname{Log}[1+e x]-\frac{3 b^3 n^3 \operatorname{Log}[1+e x]}{8 x^2}+\frac{3}{4} b^2 e^2 n^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}[1+e x]-\frac{3 b^2 n^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}[1+e x]}{4 x^2}+\frac{3}{4} b e^2 n \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}[1+e x]-\frac{3 b n \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}[1+e x]}{4 x^2}+\frac{1}{2} e^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^3 \operatorname{Log}[1+e x]-\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^3 \operatorname{Log}[1+e x]}{2 x^2}+\frac{3}{4} b^3 e^2 n^3 \operatorname{PolyLog}[2,-e x]+\frac{3}{2} b^2 e^2 n^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}[2,-e x]+\frac{3}{2} b e^2 n \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{PolyLog}[2,-e x]-\frac{3}{2} b^3 e^2 n^3 \operatorname{PolyLog}[3,-e x]-3 b^2 e^2 n^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}[3,-e x]+3 b^3 e^2 n^3 \operatorname{PolyLog}[4,-e x]$$

Problem 39: Result optimal but 2 more steps used.

$$\int \frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}\left[d \left(\frac{1}{d}+f x^2\right)\right]}{x^4} \, dx$$

Optimal (type 4, 543 leaves, 22 steps):

$$-\frac{52\,b^2\,d\,f\,n^2}{27\,x}-\frac{4}{27}\,b^2\,d^{3/2}\,f^{3/2}\,n^2\,\text{ArcTan}\left[\sqrt{d}\,\sqrt{f}\,x\right]-$$
$$\frac{16\,b\,d\,f\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{9\,x}-\frac{4}{9}\,b\,d^{3/2}\,f^{3/2}\,n\,\text{ArcTan}\left[\sqrt{d}\,\sqrt{f}\,x\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)-$$
$$\frac{2\,d\,f\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{3\,x}+\frac{1}{3}\,\left(-d\right)^{3/2}\,f^{3/2}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1-\sqrt{-d}\,\sqrt{f}\,x\right]-$$
$$\frac{1}{3}\,\left(-d\right)^{3/2}\,f^{3/2}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1+\sqrt{-d}\,\sqrt{f}\,x\right]-\frac{2\,b^2\,n^2\,\text{Log}\left[1+d\,f\,x^2\right]}{27\,x^3}-$$
$$\frac{2\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[1+d\,f\,x^2\right]}{9\,x^3}-\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1+d\,f\,x^2\right]}{3\,x^3}-$$
$$\frac{2}{3}\,b\,\left(-d\right)^{3/2}\,f^{3/2}\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,\,-\sqrt{-d}\,\sqrt{f}\,x\right]+$$
$$\frac{2}{3}\,b\,\left(-d\right)^{3/2}\,f^{3/2}\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,\,\sqrt{-d}\,\sqrt{f}\,x\right]+$$
$$\frac{2}{9}\,i\,b^2\,d^{3/2}\,f^{3/2}\,n^2\,\text{PolyLog}\left[2,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]-\frac{2}{9}\,i\,b^2\,d^{3/2}\,f^{3/2}\,n^2\,\text{PolyLog}\left[2,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]+$$
$$\frac{2}{3}\,b^2\,\left(-d\right)^{3/2}\,f^{3/2}\,n^2\,\text{PolyLog}\left[3,\,-\sqrt{-d}\,\sqrt{f}\,x\right]-\frac{2}{3}\,b^2\,\left(-d\right)^{3/2}\,f^{3/2}\,n^2\,\text{PolyLog}\left[3,\,\sqrt{-d}\,\sqrt{f}\,x\right]$$

Result (type 4, 543 leaves, 24 steps):

$$-\frac{52\,b^2\,d\,f\,n^2}{27\,x}-\frac{4}{27}\,b^2\,d^{3/2}\,f^{3/2}\,n^2\,\text{ArcTan}\left[\sqrt{d}\,\sqrt{f}\,x\right]-$$
$$\frac{16\,b\,d\,f\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{9\,x}-\frac{4}{9}\,b\,d^{3/2}\,f^{3/2}\,n\,\text{ArcTan}\left[\sqrt{d}\,\sqrt{f}\,x\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)-$$
$$\frac{2\,d\,f\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{3\,x}+\frac{1}{3}\,\left(-d\right)^{3/2}\,f^{3/2}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1-\sqrt{-d}\,\sqrt{f}\,x\right]-$$
$$\frac{1}{3}\,\left(-d\right)^{3/2}\,f^{3/2}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1+\sqrt{-d}\,\sqrt{f}\,x\right]-\frac{2\,b^2\,n^2\,\text{Log}\left[1+d\,f\,x^2\right]}{27\,x^3}-$$
$$\frac{2\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[1+d\,f\,x^2\right]}{9\,x^3}-\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1+d\,f\,x^2\right]}{3\,x^3}-$$
$$\frac{2}{3}\,b\,\left(-d\right)^{3/2}\,f^{3/2}\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,\,-\sqrt{-d}\,\sqrt{f}\,x\right]+$$
$$\frac{2}{3}\,b\,\left(-d\right)^{3/2}\,f^{3/2}\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,\,\sqrt{-d}\,\sqrt{f}\,x\right]+$$
$$\frac{2}{9}\,i\,b^2\,d^{3/2}\,f^{3/2}\,n^2\,\text{PolyLog}\left[2,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]-\frac{2}{9}\,i\,b^2\,d^{3/2}\,f^{3/2}\,n^2\,\text{PolyLog}\left[2,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]+$$
$$\frac{2}{3}\,b^2\,\left(-d\right)^{3/2}\,f^{3/2}\,n^2\,\text{PolyLog}\left[3,\,-\sqrt{-d}\,\sqrt{f}\,x\right]-\frac{2}{3}\,b^2\,\left(-d\right)^{3/2}\,f^{3/2}\,n^2\,\text{PolyLog}\left[3,\,\sqrt{-d}\,\sqrt{f}\,x\right]$$

Problem 82: Result valid but suboptimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{x^2}\,dx$$

Optimal (type 4, 248 leaves, 10 steps):

$$\frac{2 b^2 f m n^2 \text{Log}[x]}{e} - \frac{2 b f m n \text{Log}\left[1 + \frac{e}{f x}\right] (a + b \text{Log}[c x^n])}{e} - \frac{f m \text{Log}\left[1 + \frac{e}{f x}\right] (a + b \text{Log}[c x^n])^2}{e} - \frac{2 b^2 f m n^2 \text{Log}[e + f x]}{e} - \frac{2 b^2 n^2 \text{Log}\left[d (e + f x)^m\right]}{x} - \frac{2 b n (a + b \text{Log}[c x^n]) \text{Log}\left[d (e + f x)^m\right]}{x} - \frac{(a + b \text{Log}[c x^n])^2 \text{Log}\left[d (e + f x)^m\right]}{x} + \frac{2 b^2 f m n^2 \text{PolyLog}\left[2, -\frac{e}{f x}\right]}{e} + \frac{2 b f m n (a + b \text{Log}[c x^n]) \text{PolyLog}\left[2, -\frac{e}{f x}\right]}{e} + \frac{2 b^2 f m n^2 \text{PolyLog}\left[3, -\frac{e}{f x}\right]}{e}$$

Result (type 4, 283 leaves, 15 steps):

$$\frac{2 b^2 f m n^2 \text{Log}[x]}{e} + \frac{f m (a + b \text{Log}[c x^n])^2}{e} + \frac{f m (a + b \text{Log}[c x^n])^3}{3 b e n} - \frac{2 b^2 f m n^2 \text{Log}[e + f x]}{e} - \frac{2 b^2 n^2 \text{Log}\left[d (e + f x)^m\right]}{x} - \frac{2 b n (a + b \text{Log}[c x^n]) \text{Log}\left[d (e + f x)^m\right]}{x} - \frac{(a + b \text{Log}[c x^n])^2 \text{Log}\left[d (e + f x)^m\right]}{x} - \frac{2 b f m n (a + b \text{Log}[c x^n]) \text{Log}\left[1 + \frac{f x}{e}\right]}{e} - \frac{f m (a + b \text{Log}[c x^n])^2 \text{Log}\left[1 + \frac{f x}{e}\right]}{e} - \frac{2 b^2 f m n^2 \text{PolyLog}\left[2, -\frac{f x}{e}\right]}{e} - \frac{2 b f m n (a + b \text{Log}[c x^n]) \text{PolyLog}\left[2, -\frac{f x}{e}\right]}{e} + \frac{2 b^2 f m n^2 \text{PolyLog}\left[3, -\frac{f x}{e}\right]}{e}$$

Problem 83: Result valid but suboptimal antiderivative.

$$\int \frac{(a + b \text{Log}[c x^n])^2 \text{Log}\left[d (e + f x)^m\right]}{x^3} \, dx$$

Optimal (type 4, 344 leaves, 14 steps):

$$-\frac{7 b^2 f m n^2}{4 e x} - \frac{b^2 f^2 m n^2 \text{Log}[x]}{4 e^2} - \frac{3 b f m n (a + b \text{Log}[c x^n])}{2 e x} + \frac{b f^2 m n \text{Log}\left[1 + \frac{e}{f x}\right] (a + b \text{Log}[c x^n])}{2 e^2} - \frac{f m (a + b \text{Log}[c x^n])^2}{2 e x} + \frac{f^2 m \text{Log}\left[1 + \frac{e}{f x}\right] (a + b \text{Log}[c x^n])^2}{2 e^2} + \frac{b^2 f^2 m n^2 \text{Log}[e + f x]}{4 e^2} - \frac{b^2 n^2 \text{Log}\left[d (e + f x)^m\right]}{4 x^2} - \frac{b n (a + b \text{Log}[c x^n]) \text{Log}\left[d (e + f x)^m\right]}{2 x^2} - \frac{(a + b \text{Log}[c x^n])^2 \text{Log}\left[d (e + f x)^m\right]}{2 x^2} - \frac{b^2 f^2 m n^2 \text{PolyLog}\left[2, -\frac{e}{f x}\right]}{2 e^2} - \frac{b f^2 m n (a + b \text{Log}[c x^n]) \text{PolyLog}\left[2, -\frac{e}{f x}\right]}{e^2} - \frac{b^2 f^2 m n^2 \text{PolyLog}\left[3, -\frac{e}{f x}\right]}{e^2}$$

Result (type 4, 385 leaves, 19 steps):

$$-\frac{7 b^2 f m n^2}{4 e x}-\frac{b^2 f^2 m n^2 \text{Log}[x]}{4 e^2}-\frac{3 b f m n \left(a+b \text{Log}\left[c x^n\right]\right)}{2 e x}-\frac{f^2 m \left(a+b \text{Log}\left[c x^n\right]\right)^2}{4 e^2}-\frac{f m \left(a+b \text{Log}\left[c x^n\right]\right)^2}{2 e x}-\frac{f^2 m \left(a+b \text{Log}\left[c x^n\right]\right)^3}{6 b e^2 n}+\frac{b^2 f^2 m n^2 \text{Log}[e+f x]}{4 e^2}-\frac{b^2 n^2 \text{Log}\left[d (e+f x)^m\right]}{4 x^2}-\frac{b n \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[d (e+f x)^m\right]}{2 x^2}-\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[d (e+f x)^m\right]}{2 x^2}+\frac{b f^2 m n \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[1+\frac{f x}{e}\right]}{2 e^2}+\frac{f^2 m \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[1+\frac{f x}{e}\right]}{2 e^2}+\frac{b^2 f^2 m n^2 \text{PolyLog}\left[2,-\frac{f x}{e}\right]}{2 e^2}+\frac{b f^2 m n \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-\frac{f x}{e}\right]}{e^2}-\frac{b^2 f^2 m n^2 \text{PolyLog}\left[3,-\frac{f x}{e}\right]}{e^2}$$

Problem 84: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[d (e+f x)^m\right]}{x^4} \, dx$$

Optimal (type 4, 420 leaves, 19 steps):

$$-\frac{19 b^2 f m n^2}{108 e x^2}+\frac{26 b^2 f^2 m n^2}{27 e^2 x}+\frac{2 b^2 f^3 m n^2 \text{Log}[x]}{27 e^3}-\frac{5 b f m n \left(a+b \text{Log}\left[c x^n\right]\right)}{18 e x^2}+\frac{8 b f^2 m n \left(a+b \text{Log}\left[c x^n\right]\right)}{9 e^2 x}-\frac{2 b f^3 m n \text{Log}\left[1+\frac{e}{f x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)}{9 e^3}-\frac{f m \left(a+b \text{Log}\left[c x^n\right]\right)^2}{6 e x^2}+\frac{f^2 m \left(a+b \text{Log}\left[c x^n\right]\right)^2}{3 e^2 x}-\frac{f^3 m \text{Log}\left[1+\frac{e}{f x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^2}{3 e^3}-\frac{2 b^2 f^3 m n^2 \text{Log}[e+f x]}{27 e^3}-\frac{2 b^2 n^2 \text{Log}\left[d (e+f x)^m\right]}{27 x^3}-\frac{2 b n \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[d (e+f x)^m\right]}{9 x^3}-\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[d (e+f x)^m\right]}{3 x^3}+\frac{2 b^2 f^3 m n^2 \text{PolyLog}\left[2,-\frac{e}{f x}\right]}{9 e^3}+\frac{2 b f^3 m n \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-\frac{e}{f x}\right]}{3 e^3}+\frac{2 b^2 f^3 m n^2 \text{PolyLog}\left[3,-\frac{e}{f x}\right]}{3 e^3}$$

Result (type 4, 462 leaves, 22 steps):

$$-\frac{19\,b^2\,f\,m\,n^2}{108\,e\,x^2}+\frac{26\,b^2\,f^2\,m\,n^2}{27\,e^2\,x}+\frac{2\,b^2\,f^3\,m\,n^2\,\text{Log}[x]}{27\,e^3}-\frac{5\,b\,f\,m\,n\,\left(a+b\,\text{Log}[c\,x^n]\right)}{18\,e\,x^2}+$$
$$\frac{8\,b\,f^2\,m\,n\,\left(a+b\,\text{Log}[c\,x^n]\right)}{9\,e^2\,x}+\frac{f^3\,m\,\left(a+b\,\text{Log}[c\,x^n]\right)^2}{9\,e^3}-\frac{f\,m\,\left(a+b\,\text{Log}[c\,x^n]\right)^2}{6\,e\,x^2}+$$
$$\frac{f^2\,m\,\left(a+b\,\text{Log}[c\,x^n]\right)^2}{3\,e^2\,x}+\frac{f^3\,m\,\left(a+b\,\text{Log}[c\,x^n]\right)^3}{9\,b\,e^3\,n}-\frac{2\,b^2\,f^3\,m\,n^2\,\text{Log}[e+f\,x]}{27\,e^3}-$$
$$\frac{2\,b^2\,n^2\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{27\,x^3}-\frac{2\,b\,n\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{9\,x^3}-$$
$$\frac{\left(a+b\,\text{Log}[c\,x^n]\right)^2\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{3\,x^3}-\frac{2\,b\,f^3\,m\,n\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{Log}\left[1+\frac{f\,x}{e}\right]}{9\,e^3}-$$
$$\frac{f^3\,m\,\left(a+b\,\text{Log}[c\,x^n]\right)^2\,\text{Log}\left[1+\frac{f\,x}{e}\right]}{3\,e^3}-\frac{2\,b^2\,f^3\,m\,n^2\,\text{PolyLog}\left[2,-\frac{f\,x}{e}\right]}{9\,e^3}-$$
$$\frac{2\,b\,f^3\,m\,n\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{PolyLog}\left[2,-\frac{f\,x}{e}\right]}{3\,e^3}+\frac{2\,b^2\,f^3\,m\,n^2\,\text{PolyLog}\left[3,-\frac{f\,x}{e}\right]}{3\,e^3}$$

Problem 88: Result valid but suboptimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}[c\,x^n]\right)^3\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{x^2}\,dx$$

Optimal (type 4, 411 leaves, 14 steps):

$$\frac{6\,b^3\,f\,m\,n^3\,\text{Log}[x]}{e}-\frac{6\,b^2\,f\,m\,n^2\,\text{Log}\left[1+\frac{e}{f\,x}\right]\,\left(a+b\,\text{Log}[c\,x^n]\right)}{e}-$$
$$\frac{3\,b\,f\,m\,n\,\text{Log}\left[1+\frac{e}{f\,x}\right]\,\left(a+b\,\text{Log}[c\,x^n]\right)^2}{e}-\frac{f\,m\,\text{Log}\left[1+\frac{e}{f\,x}\right]\,\left(a+b\,\text{Log}[c\,x^n]\right)^3}{e}-$$
$$\frac{6\,b^3\,f\,m\,n^3\,\text{Log}[e+f\,x]}{e}-\frac{6\,b^3\,n^3\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{x}-\frac{6\,b^2\,n^2\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{x}-$$
$$\frac{3\,b\,n\,\left(a+b\,\text{Log}[c\,x^n]\right)^2\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{x}-\frac{\left(a+b\,\text{Log}[c\,x^n]\right)^3\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{x}+$$
$$\frac{6\,b^3\,f\,m\,n^3\,\text{PolyLog}\left[2,-\frac{e}{f\,x}\right]}{e}+\frac{6\,b^2\,f\,m\,n^2\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{PolyLog}\left[2,-\frac{e}{f\,x}\right]}{e}+$$
$$\frac{3\,b\,f\,m\,n\,\left(a+b\,\text{Log}[c\,x^n]\right)^2\,\text{PolyLog}\left[2,-\frac{e}{f\,x}\right]}{e}+\frac{6\,b^3\,f\,m\,n^3\,\text{PolyLog}\left[3,-\frac{e}{f\,x}\right]}{e}+$$
$$\frac{6\,b^2\,f\,m\,n^2\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{PolyLog}\left[3,-\frac{e}{f\,x}\right]}{e}+\frac{6\,b^3\,f\,m\,n^3\,\text{PolyLog}\left[4,-\frac{e}{f\,x}\right]}{e}$$

Result (type 4, 459 leaves, 22 steps):

$$\frac{6 b^3 f m n^3 \text{Log}[x]}{e}+\frac{3 b f m n \left(a+b \text{Log}\left[c x^n\right]\right)^2}{e}+\frac{f m \left(a+b \text{Log}\left[c x^n\right]\right)^3}{e}+$$
$$\frac{f m \left(a+b \text{Log}\left[c x^n\right]\right)^4}{4 b e n}-\frac{6 b^3 f m n^3 \text{Log}[e+f x]}{e}-\frac{6 b^3 n^3 \text{Log}\left[d (e+f x)^m\right]}{x}-$$
$$\frac{6 b^2 n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[d (e+f x)^m\right]}{x}-\frac{3 b n \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[d (e+f x)^m\right]}{x}-$$
$$\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^3 \text{Log}\left[d (e+f x)^m\right]}{x}-\frac{6 b^2 f m n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[1+\frac{f x}{e}\right]}{e}-$$
$$\frac{3 b f m n \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[1+\frac{f x}{e}\right]}{e}-\frac{f m \left(a+b \text{Log}\left[c x^n\right]\right)^3 \text{Log}\left[1+\frac{f x}{e}\right]}{e}-$$
$$\frac{6 b^3 f m n^3 \text{PolyLog}\left[2,-\frac{f x}{e}\right]}{e}-\frac{6 b^2 f m n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-\frac{f x}{e}\right]}{e}-$$
$$\frac{3 b f m n \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{PolyLog}\left[2,-\frac{f x}{e}\right]}{e}+\frac{6 b^3 f m n^3 \text{PolyLog}\left[3,-\frac{f x}{e}\right]}{e}+$$
$$\frac{6 b^2 f m n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[3,-\frac{f x}{e}\right]}{e}-\frac{6 b^3 f m n^3 \text{PolyLog}\left[4,-\frac{f x}{e}\right]}{e}$$

Problem 89: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c x^n\right]\right)^3 \text{Log}\left[d (e+f x)^m\right]}{x^3} \, dx$$

Optimal (type 4, 555 leaves, 22 steps):

$$-\frac{45 b^3 f m n^3}{8 e x}-\frac{3 b^3 f^2 m n^3 \mathrm{Log}[x]}{8 e^2}-\frac{21 b^2 f m n^2 (a+b \mathrm{Log}[c x^n])}{4 e x}+\frac{3 b^2 f^2 m n^2 \mathrm{Log}\left[1+\frac{e}{f x}\right] (a+b \mathrm{Log}[c x^n])}{4 e^2}-\frac{9 b f m n (a+b \mathrm{Log}[c x^n])^2}{4 e x}+\frac{3 b f^2 m n \mathrm{Log}\left[1+\frac{e}{f x}\right] (a+b \mathrm{Log}[c x^n])^2}{4 e^2}-\frac{f m (a+b \mathrm{Log}[c x^n])^3}{2 e x}+\frac{f^2 m \mathrm{Log}\left[1+\frac{e}{f x}\right] (a+b \mathrm{Log}[c x^n])^3}{2 e^2}+\frac{3 b^3 f^2 m n^3 \mathrm{Log}[e+f x]}{8 e^2}-\frac{3 b^3 n^3 \mathrm{Log}[d (e+f x)^m]}{8 x^2}-\frac{3 b^2 n^2 (a+b \mathrm{Log}[c x^n]) \mathrm{Log}[d (e+f x)^m]}{4 x^2}-\frac{3 b n (a+b \mathrm{Log}[c x^n])^2 \mathrm{Log}[d (e+f x)^m]}{4 x^2}-\frac{(a+b \mathrm{Log}[c x^n])^3 \mathrm{Log}[d (e+f x)^m]}{2 x^2}-\frac{3 b^3 f^2 m n^3 \mathrm{PolyLog}\left[2,-\frac{e}{f x}\right]}{4 e^2}-\frac{3 b^2 f^2 m n^2 (a+b \mathrm{Log}[c x^n]) \mathrm{PolyLog}\left[2,-\frac{e}{f x}\right]}{2 e^2}-\frac{3 b f^2 m n (a+b \mathrm{Log}[c x^n])^2 \mathrm{PolyLog}\left[2,-\frac{e}{f x}\right]}{2 e^2}-\frac{3 b^3 f^2 m n^3 \mathrm{PolyLog}\left[3,-\frac{e}{f x}\right]}{2 e^2}-\frac{3 b^2 f^2 m n^2 (a+b \mathrm{Log}[c x^n]) \mathrm{PolyLog}\left[3,-\frac{e}{f x}\right]}{e^2}-\frac{3 b^3 f^2 m n^3 \mathrm{PolyLog}\left[4,-\frac{e}{f x}\right]}{e^2}$$

Result (type 4, 614 leaves, 30 steps):

$$-\frac{45 b^3 f m n^3}{8 e x}-\frac{3 b^3 f^2 m n^3 \mathrm{Log}[x]}{8 e^2}-\frac{21 b^2 f m n^2 (a+b \mathrm{Log}[c x^n])}{4 e x}-\frac{3 b f^2 m n (a+b \mathrm{Log}[c x^n])^2}{8 e^2}-\frac{9 b f m n (a+b \mathrm{Log}[c x^n])^2}{4 e x}-\frac{f^2 m (a+b \mathrm{Log}[c x^n])^3}{4 e^2}-\frac{f m (a+b \mathrm{Log}[c x^n])^3}{2 e x}-\frac{f^2 m (a+b \mathrm{Log}[c x^n])^4}{8 b e^2 n}+\frac{3 b^3 f^2 m n^3 \mathrm{Log}[e+f x]}{8 e^2}-\frac{3 b^3 n^3 \mathrm{Log}[d (e+f x)^m]}{8 x^2}-\frac{3 b^2 n^2 (a+b \mathrm{Log}[c x^n]) \mathrm{Log}[d (e+f x)^m]}{4 x^2}-\frac{3 b n (a+b \mathrm{Log}[c x^n])^2 \mathrm{Log}[d (e+f x)^m]}{4 x^2}-\frac{(a+b \mathrm{Log}[c x^n])^3 \mathrm{Log}[d (e+f x)^m]}{2 x^2}+\frac{3 b^2 f^2 m n^2 (a+b \mathrm{Log}[c x^n]) \mathrm{Log}\left[1+\frac{f x}{e}\right]}{4 e^2}+\frac{3 b f^2 m n (a+b \mathrm{Log}[c x^n])^2 \mathrm{Log}\left[1+\frac{f x}{e}\right]}{4 e^2}+\frac{f^2 m (a+b \mathrm{Log}[c x^n])^3 \mathrm{Log}\left[1+\frac{f x}{e}\right]}{2 e^2}+\frac{3 b^3 f^2 m n^3 \mathrm{PolyLog}\left[2,-\frac{f x}{e}\right]}{4 e^2}+\frac{3 b^2 f^2 m n^2 (a+b \mathrm{Log}[c x^n]) \mathrm{PolyLog}\left[2,-\frac{f x}{e}\right]}{2 e^2}+\frac{3 b f^2 m n (a+b \mathrm{Log}[c x^n])^2 \mathrm{PolyLog}\left[2,-\frac{f x}{e}\right]}{2 e^2}-\frac{3 b^3 f^2 m n^3 \mathrm{PolyLog}\left[3,-\frac{f x}{e}\right]}{2 e^2}-\frac{3 b^2 f^2 m n^2 (a+b \mathrm{Log}[c x^n]) \mathrm{PolyLog}\left[3,-\frac{f x}{e}\right]}{e^2}+\frac{3 b^3 f^2 m n^3 \mathrm{PolyLog}\left[4,-\frac{f x}{e}\right]}{e^2}$$

Problem 103: Result valid but suboptimal antiderivative.

$$\int \frac{(a+b\,\mathrm{Log}[c\,x^n])^2\,\mathrm{Log}[d\,(e+f\,x^2)^m]}{x^5}\,dx$$

Optimal (type 4, 356 leaves, 15 steps):

$$-\frac{7\,b^2\,f\,m\,n^2}{32\,e\,x^2}-\frac{b^2\,f^2\,m\,n^2\,\mathrm{Log}[x]}{16\,e^2}-\frac{3\,b\,f\,m\,n\,(a+b\,\mathrm{Log}[c\,x^n])}{8\,e\,x^2}+\frac{b\,f^2\,m\,n\,\mathrm{Log}\left[1+\frac{e}{f\,x^2}\right]\,(a+b\,\mathrm{Log}[c\,x^n])}{8\,e^2}-\frac{f\,m\,(a+b\,\mathrm{Log}[c\,x^n])^2}{4\,e\,x^2}+\frac{f^2\,m\,\mathrm{Log}\left[1+\frac{e}{f\,x^2}\right]\,(a+b\,\mathrm{Log}[c\,x^n])^2}{4\,e^2}+\frac{b^2\,f^2\,m\,n^2\,\mathrm{Log}[e+f\,x^2]}{32\,e^2}-\frac{b^2\,n^2\,\mathrm{Log}[d\,(e+f\,x^2)^m]}{32\,x^4}-\frac{b\,n\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}[d\,(e+f\,x^2)^m]}{8\,x^4}-\frac{(a+b\,\mathrm{Log}[c\,x^n])^2\,\mathrm{Log}[d\,(e+f\,x^2)^m]}{4\,x^4}-\frac{b^2\,f^2\,m\,n^2\,\mathrm{PolyLog}\left[2,-\frac{e}{f\,x^2}\right]}{16\,e^2}-\frac{b\,f^2\,m\,n\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{PolyLog}\left[2,-\frac{e}{f\,x^2}\right]}{4\,e^2}-\frac{b^2\,f^2\,m\,n^2\,\mathrm{PolyLog}\left[3,-\frac{e}{f\,x^2}\right]}{8\,e^2}$$

Result (type 4, 408 leaves, 20 steps):

$$-\frac{7\,b^2\,f\,m\,n^2}{32\,e\,x^2}-\frac{b^2\,f^2\,m\,n^2\,\mathrm{Log}[x]}{16\,e^2}-\frac{3\,b\,f\,m\,n\,(a+b\,\mathrm{Log}[c\,x^n])}{8\,e\,x^2}-\frac{f^2\,m\,(a+b\,\mathrm{Log}[c\,x^n])^2}{8\,e^2}-\frac{f\,m\,(a+b\,\mathrm{Log}[c\,x^n])^2}{4\,e\,x^2}-\frac{f^2\,m\,(a+b\,\mathrm{Log}[c\,x^n])^3}{6\,b\,e^2\,n}+\frac{b^2\,f^2\,m\,n^2\,\mathrm{Log}[e+f\,x^2]}{32\,e^2}-\frac{b^2\,n^2\,\mathrm{Log}[d\,(e+f\,x^2)^m]}{32\,x^4}-\frac{b\,n\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}[d\,(e+f\,x^2)^m]}{8\,x^4}-\frac{(a+b\,\mathrm{Log}[c\,x^n])^2\,\mathrm{Log}[d\,(e+f\,x^2)^m]}{4\,x^4}+\frac{b\,f^2\,m\,n\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{Log}\left[1+\frac{f\,x^2}{e}\right]}{8\,e^2}+\frac{f^2\,m\,(a+b\,\mathrm{Log}[c\,x^n])^2\,\mathrm{Log}\left[1+\frac{f\,x^2}{e}\right]}{4\,e^2}+\frac{b^2\,f^2\,m\,n^2\,\mathrm{PolyLog}\left[2,-\frac{f\,x^2}{e}\right]}{16\,e^2}+\frac{b\,f^2\,m\,n\,(a+b\,\mathrm{Log}[c\,x^n])\,\mathrm{PolyLog}\left[2,-\frac{f\,x^2}{e}\right]}{4\,e^2}-\frac{b^2\,f^2\,m\,n^2\,\mathrm{PolyLog}\left[3,-\frac{f\,x^2}{e}\right]}{8\,e^2}$$

Problem 107: Result optimal but 2 more steps used.

$$\int \frac{(a+b\,\mathrm{Log}[c\,x^n])^2\,\mathrm{Log}[d\,(e+f\,x^2)^m]}{x^4}\,dx$$

Optimal (type 4, 571 leaves, 22 steps):

$$-\frac{52\,b^2\,f\,m\,n^2}{27\,e\,x}-\frac{4\,b^2\,f^{3/2}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]}{27\,e^{3/2}}-\frac{16\,b\,f\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{9\,e\,x}-$$

$$\frac{4\,b\,f^{3/2}\,m\,n\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{9\,e^{3/2}}-\frac{2\,f\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{3\,e\,x}+$$

$$\frac{f^{3/2}\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}-\frac{f^{3/2}\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1+\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}-$$

$$\frac{2\,b^2\,n^2\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{27\,x^3}-\frac{2\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{9\,x^3}-$$

$$\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{3\,x^3}-\frac{2\,b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}+$$

$$\frac{2\,b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}+$$

$$\frac{2\,i\,b^2\,f^{3/2}\,m\,n^2\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]}{9\,e^{3/2}}-\frac{2\,i\,b^2\,f^{3/2}\,m\,n^2\,\text{PolyLog}\left[2,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]}{9\,e^{3/2}}+$$

$$\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}-\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}$$

Result (type 4, 571 leaves, 24 steps) :

$$-\frac{52\,b^2\,f\,m\,n^2}{27\,e\,x}-\frac{4\,b^2\,f^{3/2}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]}{27\,e^{3/2}}-\frac{16\,b\,f\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{9\,e\,x}-$$
$$\frac{4\,b\,f^{3/2}\,m\,n\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{9\,e^{3/2}}-\frac{2\,f\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{3\,e\,x}+$$
$$\frac{f^{3/2}\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}-\frac{f^{3/2}\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1+\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}-$$
$$\frac{2\,b^2\,n^2\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{27\,x^3}-\frac{2\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{9\,x^3}-$$
$$\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{3\,x^3}-\frac{2\,b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}+$$
$$\frac{2\,b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}+$$
$$\frac{2\,i\,b^2\,f^{3/2}\,m\,n^2\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]}{9\,e^{3/2}}-\frac{2\,i\,b^2\,f^{3/2}\,m\,n^2\,\text{PolyLog}\left[2,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]}{9\,e^{3/2}}+$$
$$\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}-\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}$$

Problem 114: Result optimal but 3 more steps used.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{x^4}\,dx$$

Optimal (type 4, 1007 leaves, 36 steps):

$$-\frac{160\,b^3\,f\,m\,n^3}{27\,e\,x}-\frac{4\,b^3\,f^{3/2}\,m\,n^3\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]}{27\,e^{3/2}}-\frac{52\,b^2\,f\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{9\,e\,x}-$$

$$\frac{4\,b^2\,f^{3/2}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{9\,e^{3/2}}-\frac{8\,b\,f\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{3\,e\,x}-$$

$$\frac{2\,f\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{3\,e\,x}+\frac{b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,\left(-e\right)^{3/2}}+$$

$$\frac{f^{3/2}\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[1-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,\left(-e\right)^{3/2}}-\frac{b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1+\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,\left(-e\right)^{3/2}}-$$

$$\frac{f^{3/2}\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[1+\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,\left(-e\right)^{3/2}}-\frac{2\,b^3\,n^3\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{27\,x^3}-$$

$$\frac{2\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{9\,x^3}-\frac{b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{3\,x^3}-$$

$$\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{3\,x^3}-\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,\left(-e\right)^{3/2}}-$$

$$\frac{b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{PolyLog}\left[2,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{\left(-e\right)^{3/2}}+\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,\left(-e\right)^{3/2}}+$$

$$\frac{b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{PolyLog}\left[2,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{\left(-e\right)^{3/2}}+\frac{2\,i\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]}{9\,e^{3/2}}-$$

$$\frac{2\,i\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[2,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]}{9\,e^{3/2}}+\frac{2\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[3,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,\left(-e\right)^{3/2}}+$$

$$\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[3,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{\left(-e\right)^{3/2}}-$$

$$\frac{2\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[3,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,\left(-e\right)^{3/2}}-\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[3,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{\left(-e\right)^{3/2}}-$$

$$\frac{2\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[4,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{\left(-e\right)^{3/2}}+\frac{2\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[4,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{\left(-e\right)^{3/2}}$$

Result (type 4, 1007 leaves, 39 steps) :

$$-\frac{160\,b^3\,f\,m\,n^3}{27\,e\,x}-\frac{4\,b^3\,f^{3/2}\,m\,n^3\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]}{27\,e^{3/2}}-\frac{52\,b^2\,f\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{9\,e\,x}-$$

$$\frac{4\,b^2\,f^{3/2}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{9\,e^{3/2}}-\frac{8\,b\,f\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{3\,e\,x}-$$

$$\frac{2\,f\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{3\,e\,x}+\frac{b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}+$$

$$\frac{f^{3/2}\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[1-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}-\frac{b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1+\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}-$$

$$\frac{f^{3/2}\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[1+\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}-\frac{2\,b^3\,n^3\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{27\,x^3}-$$

$$\frac{2\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{9\,x^3}-\frac{b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{3\,x^3}-$$

$$\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]}{3\,x^3}-\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}-$$

$$\frac{b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{PolyLog}\left[2,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{(-e)^{3/2}}+\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}+$$

$$\frac{b\,f^{3/2}\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{PolyLog}\left[2,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{(-e)^{3/2}}+\frac{2\,i\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]}{9\,e^{3/2}}-$$

$$\frac{2\,i\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[2,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]}{9\,e^{3/2}}+\frac{2\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[3,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}+$$

$$\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[3,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{(-e)^{3/2}}-$$

$$\frac{2\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[3,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{3\,(-e)^{3/2}}-\frac{2\,b^2\,f^{3/2}\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[3,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{(-e)^{3/2}}-$$

$$\frac{2\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[4,-\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{(-e)^{3/2}}+\frac{2\,b^3\,f^{3/2}\,m\,n^3\,\text{PolyLog}\left[4,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{(-e)^{3/2}}$$

Test results for the 314 problems in "3.2.1 (f+g x)^m (A+B log(e ((a+b x) over (c+d x))^n))^p.m"

Problem 5: Result valid but suboptimal antiderivative.

$$\int \frac{A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 84 leaves, 5 steps):

$$-\frac{\mathrm{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b\,g}+\frac{B\,n\,\mathrm{PolyLog}\left[2,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b\,g}$$

Result (type 4, 126 leaves, 9 steps):

$$-\frac{B\,n\,\mathrm{Log}\left[g\,(a+b\,x)\right]^2}{2\,b\,g}+\frac{\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}[a\,g+b\,g\,x]}{b\,g}+\frac{B\,n\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\mathrm{Log}[a\,g+b\,g\,x]}{b\,g}+\frac{B\,n\,\mathrm{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}$$

Problem 6: Result valid but suboptimal antiderivative.

$$\int \frac{A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 3, 67 leaves, 2 steps):

$$-\frac{B\,n}{b\,g^2\,(a+b\,x)}-\frac{(c+d\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}$$

Result (type 3, 108 leaves, 4 steps):

$$-\frac{B\,n}{b\,g^2\,(a+b\,x)}-\frac{B\,d\,n\,\mathrm{Log}[a+b\,x]}{b\,(b\,c-a\,d)\,g^2}-\frac{A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b\,g^2\,(a+b\,x)}+\frac{B\,d\,n\,\mathrm{Log}[c+d\,x]}{b\,(b\,c-a\,d)\,g^2}$$

Problem 10: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^4\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 396 leaves, 8 steps):

$$-\frac{B\,(b\,c-a\,d)\,g^4\,n\,(a+b\,x)^4\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{10\,b\,d}+\frac{g^4\,(a+b\,x)^5\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{5\,b}+$$
$$\frac{B\,(b\,c-a\,d)^2\,g^4\,n\,(a+b\,x)^3\,\left(4\,A+B\,n+4\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{30\,b\,d^2}-$$
$$\frac{B\,(b\,c-a\,d)^3\,g^4\,n\,(a+b\,x)^2\,\left(12\,A+7\,B\,n+12\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{60\,b\,d^3}+$$
$$\frac{B\,(b\,c-a\,d)^4\,g^4\,n\,(a+b\,x)\,\left(12\,A+13\,B\,n+12\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{30\,b\,d^4}+$$
$$\frac{B\,(b\,c-a\,d)^5\,g^4\,n\,\left(12\,A+25\,B\,n+12\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{30\,b\,d^5}+$$
$$\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\mathrm{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{5\,b\,d^5}$$

Result (type 4, 602 leaves, 27 steps):

$$\frac{2\,A\,B\,(b\,c-a\,d)^4\,g^4\,n\,x}{5\,d^4}+\frac{13\,B^2\,(b\,c-a\,d)^4\,g^4\,n^2\,x}{30\,d^4}-\frac{7\,B^2\,(b\,c-a\,d)^3\,g^4\,n^2\,(a+b\,x)^2}{60\,b\,d^3}+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g^4\,n^2\,(a+b\,x)^3}{30\,b\,d^2}+\frac{2\,B^2\,(b\,c-a\,d)^4\,g^4\,n\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{5\,b\,d^4}-$$
$$\frac{B\,(b\,c-a\,d)^3\,g^4\,n\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,b\,d^3}+$$
$$\frac{2\,B\,(b\,c-a\,d)^2\,g^4\,n\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{15\,b\,d^2}-$$
$$\frac{B\,(b\,c-a\,d)\,g^4\,n\,(a+b\,x)^4\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{10\,b\,d}+\frac{g^4\,(a+b\,x)^5\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{5\,b}-$$
$$\frac{5\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\mathrm{Log}[c+d\,x]}{6\,b\,d^5}+\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{5\,b\,d^5}-$$
$$\frac{2\,B\,(b\,c-a\,d)^5\,g^4\,n\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[c+d\,x]}{5\,b\,d^5}-$$
$$\frac{B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\mathrm{Log}[c+d\,x]^2}{5\,b\,d^5}+\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\mathrm{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{5\,b\,d^5}$$

Problem 11: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 335 leaves, 7 steps):

$$-\frac{B\,(b c-a d)\,g^3 n\,(a+b x)^3\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6\,b\,d}+\frac{g^3\,(a+b x)^4\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4\,b}+$$
$$\frac{B\,(b c-a d)^2 g^3 n\,(a+b x)^2\left(3 A+B n+3 B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{12\,b\,d^2}-$$
$$\frac{B\,(b c-a d)^3 g^3 n\,(a+b x)\left(6 A+5 B n+6 B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{12\,b\,d^3}-$$
$$\frac{B\,(b c-a d)^4 g^3 n\left(6 A+11 B n+6 B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b\,(c+d x)}\right]}{12\,b\,d^4}-$$
$$\frac{B^2\,(b c-a d)^4 g^3 n^2 \operatorname{PolyLog}\left[2,\frac{d\,(a+b x)}{b\,(c+d x)}\right]}{2\,b\,d^4}$$

Result (type 4, 512 leaves, 23 steps):

$$-\frac{A B\,(b c-a d)^3 g^3 n\,x}{2\,d^3}-\frac{5\,B^2\,(b c-a d)^3 g^3 n^2 x}{12\,d^3}+\frac{B^2\,(b c-a d)^2 g^3 n^2\,(a+b x)^2}{12\,b\,d^2}-$$
$$\frac{B^2\,(b c-a d)^3 g^3 n\,(a+b x) \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]}{2\,b\,d^3}+\frac{B\,(b c-a d)^2 g^3 n\,(a+b x)^2\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4\,b\,d^2}-$$
$$\frac{B\,(b c-a d)\,g^3 n\,(a+b x)^3\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6\,b\,d}+\frac{g^3\,(a+b x)^4\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4\,b}+$$
$$\frac{11\,B^2\,(b c-a d)^4 g^3 n^2 \operatorname{Log}[c+d x]}{12\,b\,d^4}-\frac{B^2\,(b c-a d)^4 g^3 n^2 \operatorname{Log}\left[-\frac{d\,(a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{2\,b\,d^4}+$$
$$\frac{B\,(b c-a d)^4 g^3 n\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{2\,b\,d^4}+$$
$$\frac{B^2\,(b c-a d)^4 g^3 n^2 \operatorname{Log}[c+d x]^2}{4\,b\,d^4}-\frac{B^2\,(b c-a d)^4 g^3 n^2 \operatorname{PolyLog}\left[2,\frac{b\,(c+d x)}{b c-a d}\right]}{2\,b\,d^4}$$

Problem 12: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^2\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 274 leaves, 6 steps):

$$-\frac{B\,(b\,c-a\,d)\,g^2\,n\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,d}+\frac{g^2\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,b}+$$
$$\frac{B\,(b\,c-a\,d)^2\,g^2\,n\,(a+b\,x)\,\left(2\,A+B\,n+2\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,d^2}+$$
$$\frac{B\,(b\,c-a\,d)^3\,g^2\,n\,\left(2\,A+3\,B\,n+2\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{3\,b\,d^3}+$$
$$\frac{2\,B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\mathrm{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{3\,b\,d^3}$$

Result (type 4, 420 leaves, 19 steps):

$$\frac{2\,A\,B\,(b\,c-a\,d)^2\,g^2\,n\,x}{3\,d^2}+\frac{B^2\,(b\,c-a\,d)^2\,g^2\,n^2\,x}{3\,d^2}+\frac{2\,B^2\,(b\,c-a\,d)^2\,g^2\,n\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{3\,b\,d^2}-$$
$$\frac{B\,(b\,c-a\,d)\,g^2\,n\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,d}+\frac{g^2\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,b}-$$
$$\frac{B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\mathrm{Log}[c+d\,x]}{b\,d^3}+\frac{2\,B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{3\,b\,d^3}-$$
$$\frac{2\,B\,(b\,c-a\,d)^3\,g^2\,n\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[c+d\,x]}{3\,b\,d^3}-$$
$$\frac{B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\mathrm{Log}[c+d\,x]^2}{3\,b\,d^3}+\frac{2\,B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\mathrm{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b\,d^3}$$

Problem 13: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 196 leaves, 5 steps):

$$-\frac{B\,(b\,c-a\,d)\,g\,n\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b\,d}+\frac{g\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,b}-$$
$$\frac{B\,(b\,c-a\,d)^2\,g\,n\,\left(A+B\,n+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{b\,d^2}-\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,d^2}$$

Result (type 4, 309 leaves, 15 steps):

$$-\frac{A\,B\,(b\,c-a\,d)\,g\,n\,x}{d}-\frac{B^2\,(b\,c-a\,d)\,g\,n\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b\,d}+$$
$$\frac{g\,(a+b\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,b}+\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{Log}[c+d\,x]}{b\,d^2}-$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{b\,d^2}+$$
$$\frac{B\,(b\,c-a\,d)^2\,g\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}[c+d\,x]}{b\,d^2}+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{Log}[c+d\,x]^2}{2\,b\,d^2}-\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,d^2}$$

Problem 14: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 138 leaves, 4 steps):

$$-\frac{\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+$$
$$\frac{2\,B\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+\frac{2\,B^2\,n^2\,\mathrm{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}$$

Result (type 4, 789 leaves, 45 steps):

$$-\frac{A\,B\,n\,\text{Log}\left[g\,(a+b\,x)\right]^2}{b\,g}+\frac{B^2\,n^2\,\text{Log}\left[g\,(a+b\,x)\right]^3}{3\,b\,g}-\frac{B^2\,n^2\,\text{Log}\left[g\,(a+b\,x)\right]^2\,\text{Log}[-c-d\,x]}{b\,g}+$$
$$\frac{2\,B^2\,n\,\text{Log}\left[g\,(a+b\,x)\right]\,\text{Log}\left[(a+b\,x)^n\right]\,\text{Log}[-c-d\,x]}{b\,g}-\frac{B^2\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}[-c-d\,x]}{b\,g}+$$
$$\frac{B^2\,n^2\,\text{Log}\left[g\,(a+b\,x)\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}+\frac{B^2\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}+$$
$$\frac{B^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{b\,g}-\frac{B^2\,\text{Log}\left[g\,(a+b\,x)\right]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{b\,g}+$$
$$\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}[a\,g+b\,g\,x]}{b\,g}+\frac{2\,A\,B\,n\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]}{b\,g}-\frac{1}{b\,g}$$
$$2\,B^2\,n\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\,\text{Log}[a\,g+b\,g\,x]-$$
$$\frac{B^2\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b\,g}-\frac{B^2\,n^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b\,g}+$$
$$\frac{2\,A\,B\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}+\frac{2\,B^2\,n\,\text{Log}\left[(a+b\,x)^n\right]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}-\frac{1}{b\,g}$$
$$2\,B^2\,n\,\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]-$$
$$\frac{2\,B^2\,n\,\text{Log}\left[(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}-$$
$$\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}-\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}$$

Problem 15: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 3, 136 leaves, 3 steps):

$$-\frac{2\,B^2\,n^2\,(c+d\,x)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{2\,B\,n\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)\,g^2\,(a+b\,x)}$$

Result (type 4, 512 leaves, 24 steps):

$$-\frac{2 B^2 n^2}{b g^2 (a+b x)}-\frac{2 B^2 d n^2 \text{Log}[a+b x]}{b (b c-a d) g^2}+\frac{B^2 d n^2 \text{Log}[a+b x]^2}{b (b c-a d) g^2}-$$
$$\frac{2 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b g^2 (a+b x)}-\frac{2 B d n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b (b c-a d) g^2}-$$
$$\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b g^2 (a+b x)}+\frac{2 B^2 d n^2 \text{Log}[c+d x]}{b (b c-a d) g^2}-\frac{2 B^2 d n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b (b c-a d) g^2}+$$
$$\frac{2 B d n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{b (b c-a d) g^2}+\frac{B^2 d n^2 \text{Log}[c+d x]^2}{b (b c-a d) g^2}-$$
$$\frac{2 B^2 d n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d) g^2}-\frac{2 B^2 d n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b (b c-a d) g^2}-\frac{2 B^2 d n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d) g^2}$$

Problem 16: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^3} \, dx$$

Optimal (type 3, 288 leaves, 7 steps):

$$\frac{2 B^2 d n^2 (c+d x)}{(b c-a d)^2 g^3 (a+b x)}-\frac{b B^2 n^2 (c+d x)^2}{4 (b c-a d)^2 g^3 (a+b x)^2}+$$
$$\frac{2 B d n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^2 g^3 (a+b x)}-\frac{b B n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^2 g^3 (a+b x)^2}+$$
$$\frac{d (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^2 g^3 (a+b x)}-\frac{b (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^2 g^3 (a+b x)^2}$$

Result (type 4, 626 leaves, 28 steps):

$$-\frac{B^2 n^2}{4 b g^3 (a+b x)^2}+\frac{3 B^2 d n^2}{2 b (b c-a d) g^3 (a+b x)}+\frac{3 B^2 d^2 n^2 \text{Log}[a+b x]}{2 b (b c-a d)^2 g^3}-$$
$$\frac{B^2 d^2 n^2 \text{Log}[a+b x]^2}{2 b (b c-a d)^2 g^3}-\frac{B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b g^3 (a+b x)^2}+\frac{B d n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b (b c-a d) g^3 (a+b x)}+$$
$$\frac{B d^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b (b c-a d)^2 g^3}-\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b g^3 (a+b x)^2}-$$
$$\frac{3 B^2 d^2 n^2 \text{Log}[c+d x]}{2 b (b c-a d)^2 g^3}+\frac{B^2 d^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b (b c-a d)^2 g^3}-$$
$$\frac{B d^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{b (b c-a d)^2 g^3}-\frac{B^2 d^2 n^2 \text{Log}[c+d x]^2}{2 b (b c-a d)^2 g^3}+$$
$$\frac{B^2 d^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^2 g^3}+\frac{B^2 d^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b (b c-a d)^2 g^3}+\frac{B^2 d^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^2 g^3}$$

Problem 17: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^4} \, dx$$

Optimal (type 3, 448 leaves, 9 steps):

$$-\frac{2 B^2 d^2 n^2 (c+d x)}{(b c-a d)^3 g^4 (a+b x)}+\frac{b B^2 d n^2 (c+d x)^2}{2 (b c-a d)^3 g^4 (a+b x)^2}-\frac{2 b^2 B^2 n^2 (c+d x)^3}{27 (b c-a d)^3 g^4 (a+b x)^3}-$$
$$\frac{2 B d^2 n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^4 (a+b x)}+\frac{b B d n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^4 (a+b x)^2}-$$
$$\frac{2 b^2 B n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^3 g^4 (a+b x)^3}-\frac{d^2 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g^4 (a+b x)}+$$
$$\frac{b d (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g^4 (a+b x)^2}-\frac{b^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d)^3 g^4 (a+b x)^3}$$

Result (type 4, 736 leaves, 32 steps):

$$-\frac{2\,B^2\,n^2}{27\,b\,g^4\,(a+b\,x)^3}+\frac{5\,B^2\,d\,n^2}{18\,b\,(b\,c-a\,d)\,g^4\,(a+b\,x)^2}-\frac{11\,B^2\,d^2\,n^2}{9\,b\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)}-$$
$$\frac{11\,B^2\,d^3\,n^2\,\text{Log}[a+b\,x]}{9\,b\,(b\,c-a\,d)^3\,g^4}+\frac{B^2\,d^3\,n^2\,\text{Log}[a+b\,x]^2}{3\,b\,(b\,c-a\,d)^3\,g^4}-\frac{2\,B\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{9\,b\,g^4\,(a+b\,x)^3}+$$
$$\frac{B\,d\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,(b\,c-a\,d)\,g^4\,(a+b\,x)^2}-\frac{2\,B\,d^2\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)}-$$
$$\frac{2\,B\,d^3\,n\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,(b\,c-a\,d)^3\,g^4}-\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,b\,g^4\,(a+b\,x)^3}+\frac{11\,B^2\,d^3\,n^2\,\text{Log}[c+d\,x]}{9\,b\,(b\,c-a\,d)^3\,g^4}-$$
$$\frac{2\,B^2\,d^3\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{3\,b\,(b\,c-a\,d)^3\,g^4}+\frac{2\,B\,d^3\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{3\,b\,(b\,c-a\,d)^3\,g^4}+$$
$$\frac{B^2\,d^3\,n^2\,\text{Log}[c+d\,x]^2}{3\,b\,(b\,c-a\,d)^3\,g^4}-\frac{2\,B^2\,d^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b\,(b\,c-a\,d)^3\,g^4}-$$
$$\frac{2\,B^2\,d^3\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,b\,(b\,c-a\,d)^3\,g^4}-\frac{2\,B^2\,d^3\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b\,(b\,c-a\,d)^3\,g^4}$$

Problem 18: Result unnecessarily involves higher level functions.

$$\int\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^5}\,dx$$

Optimal (type 3, 615 leaves, 11 steps):

$$\frac{2\,B^2\,d^3\,n^2\,(c+d\,x)}{(b\,c-a\,d)^4\,g^5\,(a+b\,x)}-\frac{3\,b\,B^2\,d^2\,n^2\,(c+d\,x)^2}{4\,(b\,c-a\,d)^4\,g^5\,(a+b\,x)^2}+$$
$$\frac{2\,b^2\,B^2\,d\,n^2\,(c+d\,x)^3}{9\,(b\,c-a\,d)^4\,g^5\,(a+b\,x)^3}-\frac{b^3\,B^2\,n^2\,(c+d\,x)^4}{32\,(b\,c-a\,d)^4\,g^5\,(a+b\,x)^4}+$$
$$\frac{2\,B\,d^3\,n\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^4\,g^5\,(a+b\,x)}-\frac{3\,b\,B\,d^2\,n\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)^4\,g^5\,(a+b\,x)^2}+$$
$$\frac{2\,b^2\,B\,d\,n\,(c+d\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,c-a\,d)^4\,g^5\,(a+b\,x)^3}-\frac{b^3\,B\,n\,(c+d\,x)^4\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{8\,(b\,c-a\,d)^4\,g^5\,(a+b\,x)^4}+$$
$$\frac{d^3\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^4\,g^5\,(a+b\,x)}-\frac{3\,b\,d^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,(b\,c-a\,d)^4\,g^5\,(a+b\,x)^2}+$$
$$\frac{b^2\,d\,(c+d\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^4\,g^5\,(a+b\,x)^3}-\frac{b^3\,(c+d\,x)^4\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{4\,(b\,c-a\,d)^4\,g^5\,(a+b\,x)^4}$$

Result (type 4, 826 leaves, 36 steps):

$$-\frac{B^2 n^2}{32 b g^5 (a+b x)^4}+\frac{7 B^2 d n^2}{72 b (b c-a d) g^5 (a+b x)^3}-\frac{13 B^2 d^2 n^2}{48 b (b c-a d)^2 g^5 (a+b x)^2}+\frac{25 B^2 d^3 n^2}{24 b (b c-a d)^3 g^5 (a+b x)}+\frac{25 B^2 d^4 n^2 \text{Log}[a+b x]}{24 b (b c-a d)^4 g^5}-\frac{B^2 d^4 n^2 \text{Log}[a+b x]^2}{4 b (b c-a d)^4 g^5}-\frac{B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{8 b g^5 (a+b x)^4}+\frac{B d n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b (b c-a d) g^5 (a+b x)^3}-\frac{B d^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 b (b c-a d)^2 g^5 (a+b x)^2}+\frac{B d^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b (b c-a d)^3 g^5 (a+b x)}+\frac{B d^4 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b (b c-a d)^4 g^5}-\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 b g^5 (a+b x)^4}-\frac{25 B^2 d^4 n^2 \text{Log}[c+d x]}{24 b (b c-a d)^4 g^5}+\frac{B^2 d^4 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{2 b (b c-a d)^4 g^5}-\frac{B d^4 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{2 b (b c-a d)^4 g^5}-\frac{B^2 d^4 n^2 \text{Log}[c+d x]^2}{4 b (b c-a d)^4 g^5}+\frac{B^2 d^4 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{2 b (b c-a d)^4 g^5}+\frac{B^2 d^4 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{2 b (b c-a d)^4 g^5}+\frac{B^2 d^4 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{2 b (b c-a d)^4 g^5}$$

Problem 19: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]} \, dx$$

Optimal (type 8, 37 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(a g+b g x)^2}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]},x\right]$$

Result (type 8, 106 leaves, 2 steps):

$$a^2 g^2 \text{CannotIntegrate}\left[\frac{1}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]},x\right]+2 a b g^2 \text{CannotIntegrate}\left[\frac{x}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]},x\right]+b^2 g^2 \text{CannotIntegrate}\left[\frac{x^2}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]},x\right]$$

Problem 20: Result valid but suboptimal antiderivative.

$$\int \frac{a g+b g x}{A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]} \, dx$$

Optimal (type 8, 35 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{a g+b g x}{A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}, x\right]$$

Result (type 8, 61 leaves, 2 steps):

$$a g \,\text{CannotIntegrate}\left[\frac{1}{A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}, x\right]+b g \,\text{CannotIntegrate}\left[\frac{x}{A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}, x\right]$$

Problem 21: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(a g+b g x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)} \, dx$$

Optimal (type 8, 37 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(a g+b g x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}, x\right]$$

Result (type 8, 37 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g+b g x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}, x\right]$$

Problem 22: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)} \, dx$$

Optimal (type 4, 94 leaves, 3 steps):

$$\frac{e^{\frac{A}{B n}} \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{\frac{1}{n}} (c+d x) \,\text{ExpIntegralEi}\left[-\frac{A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{B n}\right]}{B (b c-a d) g^2 n (a+b x)}$$

Result (type 8, 37 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g+b g x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}, x\right]$$

Problem 23: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)} \, dx$$

Optimal (type 4, 197 leaves, 7 steps):

$$\frac{b\, e^{\frac{2 A}{B n}} \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{2/n} (c+d x)^2 \operatorname{ExpIntegralEi}\left[-\frac{2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]}{B (b c-a d)^2 g^3 n (a+b x)^2}-$$
$$\frac{d\, e^{\frac{A}{B n}} \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{\frac{1}{n}} (c+d x) \operatorname{ExpIntegralEi}\left[-\frac{A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{B n}\right]}{B (b c-a d)^2 g^3 n (a+b x)}$$

Result (type 8, 37 leaves, 0 steps):

$$\operatorname{CannotIntegrate}\left[\frac{1}{(a g+b g x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}, x\right]$$

Problem 24: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2}{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Optimal (type 8, 37 leaves, 0 steps):

$$\operatorname{Unintegrable}\left[\frac{(a g+b g x)^2}{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Result (type 8, 106 leaves, 2 steps):

$$a^2 g^2 \operatorname{CannotIntegrate}\left[\frac{1}{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]+$$
$$2 a b g^2 \operatorname{CannotIntegrate}\left[\frac{x}{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]+$$
$$b^2 g^2 \operatorname{CannotIntegrate}\left[\frac{x^2}{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Problem 25: Result valid but suboptimal antiderivative.

$$\int \frac{a g+b g x}{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Optimal (type 8, 35 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{a g+b g x}{\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Result (type 8, 61 leaves, 2 steps):

$$a g \text{ CannotIntegrate}\left[\frac{1}{\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]+b g \text{ CannotIntegrate}\left[\frac{x}{\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Problem 26: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(a g+b g x)\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Optimal (type 8, 37 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(a g+b g x)\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Result (type 8, 37 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g+b g x)\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Problem 27: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^2\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Optimal (type 4, 153 leaves, 4 steps):

$$-\frac{e^{\frac{A}{B n}}\left(e\left(\frac{a+b x}{c+d x}\right)^n\right)^{\frac{1}{n}}(c+d x) \text{ ExpIntegralEi}\left[-\frac{A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]}{B n}\right]}{B^2 (b c-a d) g^2 n^2 (a+b x)}-\frac{c+d x}{B (b c-a d) g^2 n (a+b x)\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}$$

Result (type 8, 37 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g+b g x)^2\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Problem 28: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^3\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Optimal (type 4, 314 leaves, 9 steps):

$$-\left(\left(2\, b\, e^{\frac{2A}{B n}} \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{2/n} (c+d x)^2\, \text{ExpIntegralEi}\left[-\frac{2\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]\right) \Big/ \left(B^2 (b c-a d)^2 g^3 n^2 (a+b x)^2\right)\right)+$$

$$\frac{d\, e^{\frac{A}{B n}} \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{\frac{1}{n}} (c+d x)\, \text{ExpIntegralEi}\left[-\frac{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{B n}\right]}{B^2 (b c-a d)^2 g^3 n^2 (a+b x)}+$$

$$\frac{d (c+d x)}{B (b c-a d)^2 g^3 n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}-$$

$$\frac{b (c+d x)^2}{B (b c-a d)^2 g^3 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}$$

Result (type 8, 37 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g+b g x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Problem 33: Result valid but suboptimal antiderivative.

$$\int \frac{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{c g+d g x}\, dx$$

Optimal (type 4, 80 leaves, 5 steps):

$$-\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d g}-\frac{B n\, \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d g}$$

Result (type 4, 128 leaves, 9 steps):

$$\frac{B n\, \text{Log}[g (c+d x)]^2}{2 d g}-\frac{B n\, \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c g+d g x]}{d g}+$$

$$\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c g+d g x]}{d g}-\frac{B n\, \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d g}$$

Problem 34: Result valid but suboptimal antiderivative.

$$\int \frac{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(c g+d g x)^2}\, dx$$

Optimal (type 3, 102 leaves, 3 steps):

$$\frac{A\,(a+b\,x)}{(b\,c-a\,d)\,g^2\,(c+d\,x)}-\frac{B\,n\,(a+b\,x)}{(b\,c-a\,d)\,g^2\,(c+d\,x)}+\frac{B\,(a+b\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)\,g^2\,(c+d\,x)}$$

Result (type 3, 107 leaves, 4 steps):

$$\frac{B\,n}{d\,g^2\,(c+d\,x)}+\frac{b\,B\,n\,\text{Log}[a+b\,x]}{d\,(b\,c-a\,d)\,g^2}-\frac{A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d\,g^2\,(c+d\,x)}-\frac{b\,B\,n\,\text{Log}[c+d\,x]}{d\,(b\,c-a\,d)\,g^2}$$

Problem 38: Result valid but suboptimal antiderivative.

$$\int(c\,g+d\,g\,x)^4\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 544 leaves, 19 steps):

$$\frac{13\,B^2\,(b\,c-a\,d)^4\,g^4\,n^2\,x}{30\,b^4}+\frac{7\,B^2\,(b\,c-a\,d)^3\,g^4\,n^2\,(c+d\,x)^2}{60\,b^3\,d}+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g^4\,n^2\,(c+d\,x)^3}{30\,b^2\,d}-\frac{2\,B\,(b\,c-a\,d)^4\,g^4\,n\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,b^5}-$$
$$\frac{B\,(b\,c-a\,d)^3\,g^4\,n\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,b^3\,d}-$$
$$\frac{2\,B\,(b\,c-a\,d)^2\,g^4\,n\,(c+d\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{15\,b^2\,d}-$$
$$\frac{B\,(b\,c-a\,d)\,g^4\,n\,(c+d\,x)^4\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{10\,b\,d}+\frac{g^4\,(c+d\,x)^5\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{5\,d}+$$
$$\frac{13\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{30\,b^5\,d}+\frac{5\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\text{Log}[c+d\,x]}{6\,b^5\,d}+$$
$$\frac{2\,B\,(b\,c-a\,d)^5\,g^4\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{5\,b^5\,d}-$$
$$\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{5\,b^5\,d}$$

Result (type 4, 634 leaves, 27 steps):

$$-\frac{2\,A\,B\,(b\,c-a\,d)^4\,g^4\,n\,x}{5\,b^4}+\frac{13\,B^2\,(b\,c-a\,d)^4\,g^4\,n^2\,x}{30\,b^4}+\frac{7\,B^2\,(b\,c-a\,d)^3\,g^4\,n^2\,(c+d\,x)^2}{60\,b^3\,d}+\frac{B^2\,(b\,c-a\,d)^2\,g^4\,n^2\,(c+d\,x)^3}{30\,b^2\,d}+\frac{13\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\mathrm{Log}[a+b\,x]}{30\,b^5\,d}+\frac{B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\mathrm{Log}[a+b\,x]^2}{5\,b^5\,d}-\frac{2\,B^2\,(b\,c-a\,d)^4\,g^4\,n\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{5\,b^5}-\frac{B\,(b\,c-a\,d)^3\,g^4\,n\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,b^3\,d}-\frac{2\,B\,(b\,c-a\,d)^2\,g^4\,n\,(c+d\,x)^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{15\,b^2\,d}-\frac{B\,(b\,c-a\,d)\,g^4\,n\,(c+d\,x)^4\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{10\,b\,d}-\frac{2\,B\,(b\,c-a\,d)^5\,g^4\,n\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,b^5\,d}+\frac{g^4\,(c+d\,x)^5\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{5\,d}+\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\mathrm{Log}[c+d\,x]}{5\,b^5\,d}-\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{5\,b^5\,d}-\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{5\,b^5\,d}$$

Problem 39: Result valid but suboptimal antiderivative.

$$\int (c\,g+d\,g\,x)^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 454 leaves, 15 steps):

$$\frac{5\,B^2\,(b\,c-a\,d)^3\,g^3\,n^2\,x}{12\,b^3}+\frac{B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,(c+d\,x)^2}{12\,b^2\,d}-\frac{B\,(b\,c-a\,d)^3\,g^3\,n\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^4}-\frac{B\,(b\,c-a\,d)^2\,g^3\,n\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,b^2\,d}-\frac{B\,(b\,c-a\,d)\,g^3\,n\,(c+d\,x)^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,b\,d}+\frac{g^3\,(c+d\,x)^4\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{4\,d}+\frac{5\,B^2\,(b\,c-a\,d)^4\,g^3\,n^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{12\,b^4\,d}+\frac{11\,B^2\,(b\,c-a\,d)^4\,g^3\,n^2\,\mathrm{Log}[c+d\,x]}{12\,b^4\,d}+\frac{B\,(b\,c-a\,d)^4\,g^3\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{2\,b^4\,d}-\frac{B^2\,(b\,c-a\,d)^4\,g^3\,n^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{2\,b^4\,d}$$

Result (type 4, 544 leaves, 23 steps):

$$-\frac{A B (b c-a d)^3 g^3 n x}{2 b^3}+\frac{5 B^2 (b c-a d)^3 g^3 n^2 x}{12 b^3}+\frac{B^2 (b c-a d)^2 g^3 n^2 (c+d x)^2}{12 b^2 d}+$$
$$\frac{5 B^2 (b c-a d)^4 g^3 n^2 \text{Log}[a+b x]}{12 b^4 d}+\frac{B^2 (b c-a d)^4 g^3 n^2 \text{Log}[a+b x]^2}{4 b^4 d}-$$
$$\frac{B^2 (b c-a d)^3 g^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{2 b^4}-\frac{B (b c-a d)^2 g^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 b^2 d}-$$
$$\frac{B (b c-a d) g^3 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b d}-$$
$$\frac{B (b c-a d)^4 g^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^4 d}+$$
$$\frac{g^3 (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 d}+\frac{B^2 (b c-a d)^4 g^3 n^2 \text{Log}[c+d x]}{2 b^4 d}-$$
$$\frac{B^2 (b c-a d)^4 g^3 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{2 b^4 d}-\frac{B^2 (b c-a d)^4 g^3 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{2 b^4 d}$$

Problem 40: Result valid but suboptimal antiderivative.

$$\int (c g+d g x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 361 leaves, 11 steps):

$$\frac{B^2 (b c-a d)^2 g^2 n^2 x}{3 b^2}-\frac{2 B (b c-a d)^2 g^2 n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^3}-$$
$$\frac{B (b c-a d) g^2 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b d}+\frac{g^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 d}+$$
$$\frac{B^2 (b c-a d)^3 g^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^3 d}+\frac{B^2 (b c-a d)^3 g^2 n^2 \text{Log}[c+d x]}{b^3 d}+$$
$$\frac{2 B (b c-a d)^3 g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{3 b^3 d}-$$
$$\frac{2 B^2 (b c-a d)^3 g^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{3 b^3 d}$$

Result (type 4, 454 leaves, 19 steps):

$$-\frac{2\,A\,B\,(b\,c-a\,d)^2\,g^2\,n\,x}{3\,b^2}+\frac{B^2\,(b\,c-a\,d)^2\,g^2\,n^2\,x}{3\,b^2}+\frac{B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\mathrm{Log}[a+b\,x]}{3\,b^3\,d}+\frac{B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\mathrm{Log}[a+b\,x]^2}{3\,b^3\,d}-\frac{2\,B^2\,(b\,c-a\,d)^2\,g^2\,n\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{3\,b^3}-\frac{B\,(b\,c-a\,d)\,g^2\,n\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,d}-\frac{2\,B\,(b\,c-a\,d)^3\,g^2\,n\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b^3\,d}+\frac{g^2\,(c+d\,x)^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,d}+\frac{2\,B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\mathrm{Log}[c+d\,x]}{3\,b^3\,d}-\frac{2\,B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b^3\,d}-\frac{2\,B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,b^3\,d}$$

Problem 41: Result valid but suboptimal antiderivative.

$$\int (c\,g+d\,g\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 220 leaves, 7 steps):

$$-\frac{B\,(b\,c-a\,d)\,g\,n\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2}+\frac{g\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,d}+\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{Log}[c+d\,x]}{b^2\,d}+\frac{B\,(b\,c-a\,d)^2\,g\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,d}-\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,d}$$

Result (type 4, 307 leaves, 15 steps):

$$-\frac{A\,B\,(b\,c-a\,d)\,g\,n\,x}{b}+\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{Log}[a+b\,x]^2}{2\,b^2\,d}-\frac{B^2\,(b\,c-a\,d)\,g\,n\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b^2}-\frac{B\,(b\,c-a\,d)^2\,g\,n\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,d}+\frac{g\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,d}+\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{Log}[c+d\,x]}{b^2\,d}-\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,d}-\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^2\,d}$$

Problem 42: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{c g+d g x} \, dx$$

Optimal (type 4, 137 leaves, 4 steps):

$$-\frac{\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d g}-\frac{2 B n \left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d g}+\frac{2 B^2 n^2 \operatorname{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d g}$$

Result (type 4, 782 leaves, 45 steps):

$$\frac{B^2 \operatorname{Log}\left[(a+b x)^n\right]^2 \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d g}-\frac{B^2 \operatorname{Log}\left[(a+b x)^n\right]^2 \operatorname{Log}\left[g (c+d x)\right]}{d g}+\frac{A B n \operatorname{Log}\left[g (c+d x)\right]^2}{d g}-\frac{B^2 n^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[g (c+d x)\right]^2}{d g}+\frac{B^2 n^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[g (c+d x)\right]^2}{d g}+\frac{B^2 n^2 \operatorname{Log}\left[g (c+d x)\right]^3}{3 d g}-\frac{2 B^2 n \operatorname{Log}[a+b x] \operatorname{Log}\left[g (c+d x)\right] \operatorname{Log}\left[(c+d x)^{-n}\right]}{d g}-\frac{B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[(c+d x)^{-n}\right]^2}{d g}+\frac{B^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[(c+d x)^{-n}\right]^2}{d g}-\frac{2 A B n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c g+d g x]}{d g}+\frac{\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \operatorname{Log}[c g+d g x]}{d g}+\frac{1}{d g} 2 B^2 n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \left(\operatorname{Log}\left[(a+b x)^n\right]-\operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+\operatorname{Log}\left[(c+d x)^{-n}\right]\right) \operatorname{Log}[c g+d g x]-\frac{B^2 n^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c g+d g x]^2}{d g}+\frac{B^2 n \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \operatorname{Log}[c g+d g x]^2}{d g}+\frac{2 B^2 n \operatorname{Log}\left[(a+b x)^n\right] \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d g}-\frac{2 A B n \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d g}-\frac{2 B^2 n \operatorname{Log}\left[(c+d x)^{-n}\right] \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d g}+\frac{1}{d g} 2 B^2 n \left(\operatorname{Log}\left[(a+b x)^n\right]-\operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+\operatorname{Log}\left[(c+d x)^{-n}\right]\right) \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-\frac{2 B^2 n^2 \operatorname{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{d g}-\frac{2 B^2 n^2 \operatorname{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{d g}$$

Problem 43: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(c\,g+d\,g\,x)^2}\,dx$$

Optimal (type 3, 163 leaves, 4 steps):

$$-\frac{2\,A\,B\,n\,(a+b\,x)}{(b\,c-a\,d)\,g^2\,(c+d\,x)}+\frac{2\,B^2\,n^2\,(a+b\,x)}{(b\,c-a\,d)\,g^2\,(c+d\,x)}-\frac{2\,B^2\,n\,(a+b\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)\,g^2\,(c+d\,x)}+\frac{(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)\,g^2\,(c+d\,x)}$$

Result (type 4, 514 leaves, 24 steps):

$$-\frac{2\,B^2\,n^2}{d\,g^2\,(c+d\,x)}-\frac{2\,b\,B^2\,n^2\,\text{Log}[a+b\,x]}{d\,(b\,c-a\,d)\,g^2}-\frac{b\,B^2\,n^2\,\text{Log}[a+b\,x]^2}{d\,(b\,c-a\,d)\,g^2}+\frac{2\,B\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{d\,g^2\,(c+d\,x)}+\frac{2\,b\,B\,n\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{d\,(b\,c-a\,d)\,g^2}-\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{d\,g^2\,(c+d\,x)}+\frac{2\,b\,B^2\,n^2\,\text{Log}[c+d\,x]}{d\,(b\,c-a\,d)\,g^2}+\frac{2\,b\,B^2\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{d\,(b\,c-a\,d)\,g^2}-\frac{2\,b\,B\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}[c+d\,x]}{d\,(b\,c-a\,d)\,g^2}-\frac{b\,B^2\,n^2\,\text{Log}[c+d\,x]^2}{d\,(b\,c-a\,d)\,g^2}+\frac{2\,b\,B^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)\,g^2}+\frac{2\,b\,B^2\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)\,g^2}+\frac{2\,b\,B^2\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)\,g^2}$$

Problem 44: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(c\,g+d\,g\,x)^3}\,dx$$

Optimal (type 3, 317 leaves, 8 steps):

$$-\frac{B^2\,d\,n^2\,(a+b\,x)^2}{4\,(b\,c-a\,d)^2\,g^3\,(c+d\,x)^2}-\frac{2\,A\,b\,B\,n\,(a+b\,x)}{(b\,c-a\,d)^2\,g^3\,(c+d\,x)}+\frac{2\,b\,B^2\,n^2\,(a+b\,x)}{(b\,c-a\,d)^2\,g^3\,(c+d\,x)}-\frac{2\,b\,B^2\,n\,(a+b\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)^2\,g^3\,(c+d\,x)}+\frac{B\,d\,n\,(a+b\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)^2\,g^3\,(c+d\,x)^2}-\frac{d\,(a+b\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,(b\,c-a\,d)^2\,g^3\,(c+d\,x)^2}+\frac{b\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^2\,g^3\,(c+d\,x)}$$

Result (type 4, 626 leaves, 28 steps):

$$-\frac{B^2 n^2}{4 d g^3 (c+d x)^2}-\frac{3 b B^2 n^2}{2 d (b c-a d) g^3 (c+d x)}-\frac{3 b^2 B^2 n^2 \text{Log}[a+b x]}{2 d (b c-a d)^2 g^3}-\frac{b^2 B^2 n^2 \text{Log}[a+b x]^2}{2 d (b c-a d)^2 g^3}+\frac{B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d g^3 (c+d x)^2}+\frac{b B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d (b c-a d) g^3 (c+d x)}+\frac{b^2 B n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d (b c-a d)^2 g^3}-\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d g^3 (c+d x)^2}+\frac{3 b^2 B^2 n^2 \text{Log}[c+d x]}{2 d (b c-a d)^2 g^3}+\frac{b^2 B^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d (b c-a d)^2 g^3}-\frac{b^2 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{d (b c-a d)^2 g^3}-\frac{b^2 B^2 n^2 \text{Log}[c+d x]^2}{2 d (b c-a d)^2 g^3}+\frac{b^2 B^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d (b c-a d)^2 g^3}+\frac{b^2 B^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d (b c-a d)^2 g^3}+\frac{b^2 B^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d (b c-a d)^2 g^3}$$

Problem 45: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(c g+d g x)^4} \, dx$$

Optimal (type 3, 429 leaves, 6 steps):

$$\frac{2 B^2 d^2 n^2 (a+b x)^3}{27 (b c-a d)^3 g^4 (c+d x)^3}-\frac{b B^2 d n^2 (a+b x)^2}{2 (b c-a d)^3 g^4 (c+d x)^2}+\frac{2 b^2 B^2 n^2 (a+b x)}{(b c-a d)^3 g^4 (c+d x)}-\frac{2 B d^2 n (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^3 g^4 (c+d x)^3}+\frac{b B d n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^4 (c+d x)^2}-\frac{2 b^2 B n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^4 (c+d x)}-\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 d g^4 (c+d x)^3}+\frac{2 b^3 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 d (b c-a d)^3 g^4}-\frac{b^3 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2}{3 d (b c-a d)^3 g^4}$$

Result (type 4, 736 leaves, 32 steps):

$$-\frac{2 B^2 n^2}{27 d g^4 (c+d x)^3}-\frac{5 b B^2 n^2}{18 d (b c-a d) g^4 (c+d x)^2}-\frac{11 b^2 B^2 n^2}{9 d (b c-a d)^2 g^4 (c+d x)}-$$
$$\frac{11 b^3 B^2 n^2 \text{Log}[a+b x]}{9 d (b c-a d)^3 g^4}-\frac{b^3 B^2 n^2 \text{Log}[a+b x]^2}{3 d (b c-a d)^3 g^4}+\frac{2 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 d g^4 (c+d x)^3}+$$
$$\frac{b B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d (b c-a d) g^4 (c+d x)^2}+\frac{2 b^2 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d (b c-a d)^2 g^4 (c+d x)}+$$
$$\frac{2 b^3 B n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d (b c-a d)^3 g^4}-\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 d g^4 (c+d x)^3}+\frac{11 b^3 B^2 n^2 \text{Log}[c+d x]}{9 d (b c-a d)^3 g^4}+$$
$$\frac{2 b^3 B^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 d (b c-a d)^3 g^4}-\frac{2 b^3 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{3 d (b c-a d)^3 g^4}-$$
$$\frac{b^3 B^2 n^2 \text{Log}[c+d x]^2}{3 d (b c-a d)^3 g^4}+\frac{2 b^3 B^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 d (b c-a d)^3 g^4}+$$
$$\frac{2 b^3 B^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 d (b c-a d)^3 g^4}+\frac{2 b^3 B^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 d (b c-a d)^3 g^4}$$

Problem 46: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(c g+d g x)^5} \, dx$$

Optimal (type 3, 536 leaves, 5 steps):

$$-\frac{B^2 d^3 n^2 (a+b x)^4}{32 (b c-a d)^4 g^5 (c+d x)^4}+\frac{2 b B^2 d^2 n^2 (a+b x)^3}{9 (b c-a d)^4 g^5 (c+d x)^3}-\frac{3 b^2 B^2 d n^2 (a+b x)^2}{4 (b c-a d)^4 g^5 (c+d x)^2}+$$
$$\frac{2 b^3 B^2 n^2 (a+b x)}{(b c-a d)^4 g^5 (c+d x)}+\frac{B d^3 n (a+b x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{8 (b c-a d)^4 g^5 (c+d x)^4}-$$
$$\frac{2 b B d^2 n (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 (b c-a d)^4 g^5 (c+d x)^3}+\frac{3 b^2 B d n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^4 g^5 (c+d x)^2}-$$
$$\frac{2 b^3 B n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^5 (c+d x)}-\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 d g^5 (c+d x)^4}+$$
$$\frac{b^4 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{a+b x}{c+d x}\right]}{2 d (b c-a d)^4 g^5}-\frac{b^4 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2}{4 d (b c-a d)^4 g^5}$$

Result (type 4, 826 leaves, 36 steps):

$$-\frac{B^2 n^2}{32 d g^5 (c+d x)^4}-\frac{7 b B^2 n^2}{72 d (b c-a d) g^5 (c+d x)^3}-\frac{13 b^2 B^2 n^2}{48 d (b c-a d)^2 g^5 (c+d x)^2}-$$

$$\frac{25 b^3 B^2 n^2}{24 d (b c-a d)^3 g^5 (c+d x)}-\frac{25 b^4 B^2 n^2 \text{Log}[a+b x]}{24 d (b c-a d)^4 g^5}-\frac{b^4 B^2 n^2 \text{Log}[a+b x]^2}{4 d (b c-a d)^4 g^5}+$$

$$\frac{B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{8 d g^5 (c+d x)^4}+\frac{b B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 d (b c-a d) g^5 (c+d x)^3}+\frac{b^2 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 d (b c-a d)^2 g^5 (c+d x)^2}+$$

$$\frac{b^3 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d (b c-a d)^3 g^5 (c+d x)}+\frac{b^4 B n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d (b c-a d)^4 g^5}-$$

$$\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 d g^5 (c+d x)^4}+\frac{25 b^4 B^2 n^2 \text{Log}[c+d x]}{24 d (b c-a d)^4 g^5}+\frac{b^4 B^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{2 d (b c-a d)^4 g^5}-$$

$$\frac{b^4 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{2 d (b c-a d)^4 g^5}-\frac{b^4 B^2 n^2 \text{Log}[c+d x]^2}{4 d (b c-a d)^4 g^5}+$$

$$\frac{b^4 B^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{2 d (b c-a d)^4 g^5}+\frac{b^4 B^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{2 d (b c-a d)^4 g^5}+\frac{b^4 B^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{2 d (b c-a d)^4 g^5}$$

Problem 47: Result valid but suboptimal antiderivative.

$$\int \frac{(c g+d g x)^2}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]} \, dx$$

Optimal (type 8, 37 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(c g+d g x)^2}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]},x\right]$$

Result (type 8, 106 leaves, 2 steps):

$$c^2 g^2 \text{CannotIntegrate}\left[\frac{1}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]},x\right]+$$

$$2 c d g^2 \text{CannotIntegrate}\left[\frac{x}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]},x\right]+$$

$$d^2 g^2 \text{CannotIntegrate}\left[\frac{x^2}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]},x\right]$$

Problem 48: Result valid but suboptimal antiderivative.

$$\int \frac{c g+d g x}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]} \, dx$$

Optimal (type 8, 35 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{c\,g+d\,g\,x}{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]},\,x\right]$$

Result (type 8, 61 leaves, 2 steps):

$$c\,g\,\text{CannotIntegrate}\left[\frac{1}{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]},\,x\right]+d\,g\,\text{CannotIntegrate}\left[\frac{x}{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]},\,x\right]$$

Problem 49: Result valid but suboptimal antiderivative.

$$\int\frac{1}{(c\,g+d\,g\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}\,dx$$

Optimal (type 8, 37 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(c\,g+d\,g\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)},\,x\right]$$

Result (type 8, 37 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(c\,g+d\,g\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)},\,x\right]$$

Problem 50: Unable to integrate problem.

$$\int\frac{1}{(c\,g+d\,g\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}\,dx$$

Optimal (type 4, 96 leaves, 3 steps):

$$\frac{e^{-\frac{A}{B\,n}}\,(a+b\,x)\,\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^{-1/n}\,\text{ExpIntegralEi}\left[\frac{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{B\,n}\right]}{B\,(b\,c-a\,d)\,g^2\,n\,(c+d\,x)}$$

Result (type 8, 37 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(c\,g+d\,g\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)},\,x\right]$$

Problem 51: Unable to integrate problem.

$$\int\frac{1}{(c\,g+d\,g\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}\,dx$$

Optimal (type 4, 199 leaves, 7 steps):

$$\frac{b\, e^{-\frac{A}{B n}} (a+b x) \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{-1/n} \text{ExpIntegralEi}\left[\frac{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{B n}\right]}{B (b c-a d)^2 g^3 n (c+d x)} - \frac{d\, e^{-\frac{2 A}{B n}} (a+b x)^2 \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{-2/n} \text{ExpIntegralEi}\left[\frac{2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]}{B (b c-a d)^2 g^3 n (c+d x)^2}$$

Result (type 8, 37 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(c g+d g x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}, x\right]$$

Problem 52: Result valid but suboptimal antiderivative.

$$\int \frac{(c g+d g x)^2}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Optimal (type 8, 37 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(c g+d g x)^2}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Result (type 8, 106 leaves, 2 steps):

$$c^2 g^2 \text{CannotIntegrate}\left[\frac{1}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right] + 2 c d g^2 \text{CannotIntegrate}\left[\frac{x}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right] + d^2 g^2 \text{CannotIntegrate}\left[\frac{x^2}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Problem 53: Result valid but suboptimal antiderivative.

$$\int \frac{c g+d g x}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Optimal (type 8, 35 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{c g+d g x}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Result (type 8, 61 leaves, 2 steps):

$$c g \text{CannotIntegrate}\left[\frac{1}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right] + d g \text{CannotIntegrate}\left[\frac{x}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Problem 54: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(c\,g + d\,g\,x)\left(A + B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}\,dx$$

Optimal (type 8, 37 leaves, 0 steps):

$$\mathrm{Unintegrable}\left[\frac{1}{(c\,g + d\,g\,x)\left(A + B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Result (type 8, 37 leaves, 0 steps):

$$\mathrm{CannotIntegrate}\left[\frac{1}{(c\,g + d\,g\,x)\left(A + B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Problem 55: Unable to integrate problem.

$$\int \frac{1}{(c\,g + d\,g\,x)^2\left(A + B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}\,dx$$

Optimal (type 4, 154 leaves, 4 steps):

$$\frac{e^{-\frac{A}{B\,n}}\,(a+b\,x)\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^{-1/n}\,\mathrm{ExpIntegralEi}\left[\frac{A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{B\,n}\right]}{B^2\,(b\,c-a\,d)\,g^2\,n^2\,(c+d\,x)} - \frac{a+b\,x}{B\,(b\,c-a\,d)\,g^2\,n\,(c+d\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}$$

Result (type 8, 37 leaves, 0 steps):

$$\mathrm{CannotIntegrate}\left[\frac{1}{(c\,g + d\,g\,x)^2\left(A + B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Problem 56: Unable to integrate problem.

$$\int \frac{1}{(c\,g + d\,g\,x)^3\left(A + B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}\,dx$$

Optimal (type 4, 256 leaves, 10 steps):

$$\frac{b\, e^{-\frac{A}{B n}} (a+b x) \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{-1/n} \text{ExpIntegralEi}\left[\frac{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{B n}\right]}{B^2 (b c-a d)^2 g^3 n^2 (c+d x)} - \frac{2 d\, e^{-\frac{2 A}{B n}} (a+b x)^2 \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{-2/n} \text{ExpIntegralEi}\left[\frac{2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]}{B^2 (b c-a d)^2 g^3 n^2 (c+d x)^2} - \frac{a+b x}{B (b c-a d) g^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}$$

Result (type 8, 37 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(c g+d g x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Problem 57: Result valid but suboptimal antiderivative.

$$\int (f+g x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) dx$$

Optimal (type 3, 364 leaves, 3 steps):

$$\frac{1}{5 b^4 d^4} B (b c-a d) g \left(a^3 d^3 g^3-a^2 b d^2 g^2 (5 d f-c g)+a b^2 d g \left(10 d^2 f^2-5 c d f g+c^2 g^2\right)-b^3 \left(10 d^3 f^3-10 c d^2 f^2 g+5 c^2 d f g^2-c^3 g^3\right)\right) n x - \frac{1}{10 b^3 d^3} B (b c-a d) g^2 \left(a^2 d^2 g^2-a b d g (5 d f-c g)+b^2 \left(10 d^2 f^2-5 c d f g+c^2 g^2\right)\right) n x^2 - \frac{B (b c-a d) g^3 (5 b d f-b c g-a d g) n x^3}{15 b^2 d^2} - \frac{B (b c-a d) g^4 n x^4}{20 b d} - \frac{B (b f-a g)^5 n \text{Log}[a+b x]}{5 b^5 g} + \frac{(f+g x)^5 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{5 g} + \frac{B (d f-c g)^5 n \text{Log}[c+d x]}{5 d^5 g}$$

Result (type 3, 348 leaves, 4 steps):

$$\frac{1}{5 b^4 d^4} B g \left(10 a b^3 d^4 f^3-10 a^2 b^2 d^4 f^2 g+5 a^3 b d^4 f g^2-a^4 d^4 g^3-b^4 c \left(10 d^3 f^3-10 c d^2 f^2 g+5 c^2 d f g^2-c^3 g^3\right)\right) n x - \frac{1}{10 b^3 d^3} B (b c-a d) g^2 \left(a^2 d^2 g^2-a b d g (5 d f-c g)+b^2 \left(10 d^2 f^2-5 c d f g+c^2 g^2\right)\right) n x^2 - \frac{B (b c-a d) g^3 (5 b d f-b c g-a d g) n x^3}{15 b^2 d^2} - \frac{B (b c-a d) g^4 n x^4}{20 b d} - \frac{B (b f-a g)^5 n \text{Log}[a+b x]}{5 b^5 g} + \frac{(f+g x)^5 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{5 g} + \frac{B (d f-c g)^5 n \text{Log}[c+d x]}{5 d^5 g}$$

Problem 58: Result optimal but 1 more steps used.

$$\int (f+g x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) dx$$

Optimal (type 3, 235 leaves, 3 steps):

$$-\frac{1}{4 b^3 d^3} B (b c-a d) g \left(a^2 d^2 g^2-a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right) n x-\frac{B (b c-a d) g^2 (4 b d f-b c g-a d g) n x^2}{8 b^2 d^2}-\frac{B (b c-a d) g^3 n x^3}{12 b d}-\frac{B (b f-a g)^4 n \operatorname{Log}[a+b x]}{4 b^4 g}+\frac{(f+g x)^4 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 g}+\frac{B (d f-c g)^4 n \operatorname{Log}[c+d x]}{4 d^4 g}$$

Result (type 3, 235 leaves, 4 steps):

$$-\frac{1}{4 b^3 d^3} B (b c-a d) g \left(a^2 d^2 g^2-a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right) n x-\frac{B (b c-a d) g^2 (4 b d f-b c g-a d g) n x^2}{8 b^2 d^2}-\frac{B (b c-a d) g^3 n x^3}{12 b d}-\frac{B (b f-a g)^4 n \operatorname{Log}[a+b x]}{4 b^4 g}+\frac{(f+g x)^4 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 g}+\frac{B (d f-c g)^4 n \operatorname{Log}[c+d x]}{4 d^4 g}$$

Problem 59: Result optimal but 1 more steps used.

$$\int (f+g x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) dx$$

Optimal (type 3, 157 leaves, 3 steps):

$$-\frac{B (b c-a d) g (3 b d f-b c g-a d g) n x}{3 b^2 d^2}-\frac{B (b c-a d) g^2 n x^2}{6 b d}-\frac{B (b f-a g)^3 n \operatorname{Log}[a+b x]}{3 b^3 g}+\frac{(f+g x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 g}+\frac{B (d f-c g)^3 n \operatorname{Log}[c+d x]}{3 d^3 g}$$

Result (type 3, 157 leaves, 4 steps):

$$-\frac{B (b c-a d) g (3 b d f-b c g-a d g) n x}{3 b^2 d^2}-\frac{B (b c-a d) g^2 n x^2}{6 b d}-\frac{B (b f-a g)^3 n \operatorname{Log}[a+b x]}{3 b^3 g}+\frac{(f+g x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 g}+\frac{B (d f-c g)^3 n \operatorname{Log}[c+d x]}{3 d^3 g}$$

Problem 60: Result optimal but 1 more steps used.

$$\int (f+g x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) dx$$

Optimal (type 3, 115 leaves, 3 steps):

$$-\frac{B (b c - a d) g n x}{2 b d} - \frac{B (b f - a g)^2 n \operatorname{Log}[a + b x]}{2 b^2 g} + \frac{(f + g x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 g} + \frac{B (d f - c g)^2 n \operatorname{Log}[c + d x]}{2 d^2 g}$$

Result (type 3, 115 leaves, 4 steps):

$$-\frac{B (b c - a d) g n x}{2 b d} - \frac{B (b f - a g)^2 n \operatorname{Log}[a + b x]}{2 b^2 g} + \frac{(f + g x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 g} + \frac{B (d f - c g)^2 n \operatorname{Log}[c + d x]}{2 d^2 g}$$

Problem 62: Result optimal but 2 more steps used.

$$\int \frac{A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{f + g x} \, dx$$

Optimal (type 4, 147 leaves, 7 steps):

$$-\frac{B n \operatorname{Log}\left[-\frac{g (a+b x)}{b f-a g}\right] \operatorname{Log}[f + g x]}{g} + \frac{\left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[f + g x]}{g} + \frac{B n \operatorname{Log}\left[-\frac{g (c+d x)}{d f-c g}\right] \operatorname{Log}[f + g x]}{g} - \frac{B n \operatorname{PolyLog}\left[2, \frac{b (f+g x)}{b f-a g}\right]}{g} + \frac{B n \operatorname{PolyLog}\left[2, \frac{d (f+g x)}{d f-c g}\right]}{g}$$

Result (type 4, 147 leaves, 9 steps):

$$-\frac{B n \operatorname{Log}\left[-\frac{g (a+b x)}{b f-a g}\right] \operatorname{Log}[f + g x]}{g} + \frac{\left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[f + g x]}{g} + \frac{B n \operatorname{Log}\left[-\frac{g (c+d x)}{d f-c g}\right] \operatorname{Log}[f + g x]}{g} - \frac{B n \operatorname{PolyLog}\left[2, \frac{b (f+g x)}{b f-a g}\right]}{g} + \frac{B n \operatorname{PolyLog}\left[2, \frac{d (f+g x)}{d f-c g}\right]}{g}$$

Problem 63: Result valid but suboptimal antiderivative.

$$\int \frac{A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(f + g x)^2} \, dx$$

Optimal (type 3, 91 leaves, 3 steps):

$$\frac{(a + b x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b f - a g) (f + g x)} + \frac{B (b c - a d) n \operatorname{Log}\left[\frac{f+g x}{c+d x}\right]}{(b f - a g) (d f - c g)}$$

Result (type 3, 119 leaves, 4 steps):

$$\frac{b B n \operatorname{Log}[a + b x]}{g (b f - a g)} - \frac{A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{g (f + g x)} - \frac{B d n \operatorname{Log}[c + d x]}{g (d f - c g)} + \frac{B (b c - a d) n \operatorname{Log}[f + g x]}{(b f - a g) (d f - c g)}$$

Problem 64: Result optimal but 1 more steps used.

$$\int \frac{A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]}{(f+g x)^3} \, dx$$

Optimal (type 3, 190 leaves, 3 steps):

$$-\frac{B (b c-a d) n}{2 (b f-a g) (d f-c g) (f+g x)}+\frac{b^2 B n \operatorname{Log}[a+b x]}{2 g (b f-a g)^2}-\frac{A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]}{2 g (f+g x)^2}-\frac{B d^2 n \operatorname{Log}[c+d x]}{2 g (d f-c g)^2}+\frac{B (b c-a d) (2 b d f-b c g-a d g) n \operatorname{Log}[f+g x]}{2 (b f-a g)^2 (d f-c g)^2}$$

Result (type 3, 190 leaves, 4 steps):

$$-\frac{B (b c-a d) n}{2 (b f-a g) (d f-c g) (f+g x)}+\frac{b^2 B n \operatorname{Log}[a+b x]}{2 g (b f-a g)^2}-\frac{A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]}{2 g (f+g x)^2}-\frac{B d^2 n \operatorname{Log}[c+d x]}{2 g (d f-c g)^2}+\frac{B (b c-a d) (2 b d f-b c g-a d g) n \operatorname{Log}[f+g x]}{2 (b f-a g)^2 (d f-c g)^2}$$

Problem 65: Result optimal but 1 more steps used.

$$\int \frac{A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]}{(f+g x)^4} \, dx$$

Optimal (type 3, 283 leaves, 3 steps):

$$-\frac{B (b c-a d) n}{6 (b f-a g) (d f-c g) (f+g x)^2}-\frac{B (b c-a d) (2 b d f-b c g-a d g) n}{3 (b f-a g)^2 (d f-c g)^2 (f+g x)}+\frac{b^3 B n \operatorname{Log}[a+b x]}{3 g (b f-a g)^3}-\frac{A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]}{3 g (f+g x)^3}-\frac{B d^3 n \operatorname{Log}[c+d x]}{3 g (d f-c g)^3}+\left(B (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) n \operatorname{Log}[f+g x]\right) \Big/ \left(3 (b f-a g)^3 (d f-c g)^3\right)$$

Result (type 3, 283 leaves, 4 steps):

$$-\frac{B (b c-a d) n}{6 (b f-a g) (d f-c g) (f+g x)^2}-\frac{B (b c-a d) (2 b d f-b c g-a d g) n}{3 (b f-a g)^2 (d f-c g)^2 (f+g x)}+\frac{b^3 B n \operatorname{Log}[a+b x]}{3 g (b f-a g)^3}-\frac{A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]}{3 g (f+g x)^3}-\frac{B d^3 n \operatorname{Log}[c+d x]}{3 g (d f-c g)^3}+\left(B (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) n \operatorname{Log}[f+g x]\right) \Big/ \left(3 (b f-a g)^3 (d f-c g)^3\right)$$

Problem 66: Result optimal but 1 more steps used.

$$\int \frac{A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(f + g x)^5} \, dx$$

Optimal (type 3, 388 leaves, 3 steps):

$$-\frac{B (b c - a d) n}{12 (b f - a g) (d f - c g) (f + g x)^3} - \frac{B (b c - a d) (2 b d f - b c g - a d g) n}{8 (b f - a g)^2 (d f - c g)^2 (f + g x)^2} - \left(B (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 \left(3 d^2 f^2 - 3 c d f g + c^2 g^2\right)\right) n\right) \Big/ \left(4 (b f - a g)^3 (d f - c g)^3 (f + g x)\right) + \frac{b^4 B n \operatorname{Log}[a + b x]}{4 g (b f - a g)^4} - \frac{A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{4 g (f + g x)^4} - \frac{B d^4 n \operatorname{Log}[c + d x]}{4 g (d f - c g)^4} - \left(B (b c - a d) (2 b d f - b c g - a d g) \left(2 a b d^2 f g - a^2 d^2 g^2 - b^2 \left(2 d^2 f^2 - 2 c d f g + c^2 g^2\right)\right) n \operatorname{Log}[f + g x]\right) \Big/ \left(4 (b f - a g)^4 (d f - c g)^4\right)$$

Result (type 3, 388 leaves, 4 steps):

$$-\frac{B (b c - a d) n}{12 (b f - a g) (d f - c g) (f + g x)^3} - \frac{B (b c - a d) (2 b d f - b c g - a d g) n}{8 (b f - a g)^2 (d f - c g)^2 (f + g x)^2} - \left(B (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 \left(3 d^2 f^2 - 3 c d f g + c^2 g^2\right)\right) n\right) \Big/ \left(4 (b f - a g)^3 (d f - c g)^3 (f + g x)\right) + \frac{b^4 B n \operatorname{Log}[a + b x]}{4 g (b f - a g)^4} - \frac{A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{4 g (f + g x)^4} - \frac{B d^4 n \operatorname{Log}[c + d x]}{4 g (d f - c g)^4} - \left(B (b c - a d) (2 b d f - b c g - a d g) \left(2 a b d^2 f g - a^2 d^2 g^2 - b^2 \left(2 d^2 f^2 - 2 c d f g + c^2 g^2\right)\right) n \operatorname{Log}[f + g x]\right) \Big/ \left(4 (b f - a g)^4 (d f - c g)^4\right)$$

Problem 67: Result valid but suboptimal antiderivative.

$$\int (f + g x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right)^2 \, dx$$

Optimal (type 4, 923 leaves, 15 steps):

$$\frac{B^2 (b c - a d)^3 g^3 n^2 x}{6 b^3 d^3} + \frac{B^2 (b c - a d)^2 g^2 (4 b d f - 3 b c g - a d g) n^2 x}{4 b^3 d^3} + \frac{B^2 (b c - a d)^2 g^3 n^2 (c + d x)^2}{12 b^2 d^4} -$$

$$\frac{1}{2 b^4 d^3} B (b c - a d) g \left(a^2 d^2 g^2 - 2 a b d g (2 d f - c g) + b^2 (6 d^2 f^2 - 8 c d f g + 3 c^2 g^2)\right)$$

$$n (a + b x) \left(A + B \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right) - \frac{1}{4 b^2 d^4}$$

$$B (b c - a d) g^2 (4 b d f - 3 b c g - a d g) n (c + d x)^2 \left(A + B \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right) -$$

$$\frac{B (b c - a d) g^3 n (c + d x)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b d^4} - \frac{(b f - a g)^4 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 b^4 g} +$$

$$\frac{(f + g x)^4 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 g} - \frac{1}{2 b^4 d^4} B (b c - a d) (2 b d f - b c g - a d g)$$

$$\left(2 a b d^2 f g - a^2 d^2 g^2 - b^2 (2 d^2 f^2 - 2 c d f g + c^2 g^2)\right) n \left(A + B \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right) \text{Log}\left[\frac{b c - a d}{b (c + d x)}\right] +$$

$$\frac{B^2 (b c - a d)^4 g^3 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{6 b^4 d^4} + \frac{B^2 (b c - a d)^3 g^2 (4 b d f - 3 b c g - a d g) n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{4 b^4 d^4} +$$

$$\frac{B^2 (b c - a d)^4 g^3 n^2 \text{Log}[c + d x]}{6 b^4 d^4} + \frac{B^2 (b c - a d)^3 g^2 (4 b d f - 3 b c g - a d g) n^2 \text{Log}[c + d x]}{4 b^4 d^4} + \frac{1}{2 b^4 d^4}$$

$$B^2 (b c - a d)^2 g \left(a^2 d^2 g^2 - 2 a b d g (2 d f - c g) + b^2 (6 d^2 f^2 - 8 c d f g + 3 c^2 g^2)\right) n^2 \text{Log}[c + d x] -$$

$$\frac{1}{2 b^4 d^4} B^2 (b c - a d) (2 b d f - b c g - a d g)$$

$$\left(2 a b d^2 f g - a^2 d^2 g^2 - b^2 (2 d^2 f^2 - 2 c d f g + c^2 g^2)\right) n^2 \text{PolyLog}\left[2, \frac{d (a + b x)}{b (c + d x)}\right]$$

Result (type 4, 1060 leaves, 31 steps):

$$-\frac{1}{2 b^3 d^3} A B (b c - a d) g \left(a^2 d^2 g^2 - a b d g (4 d f - c g) + b^2 \left(6 d^2 f^2 - 4 c d f g + c^2 g^2\right)\right) n x -$$

$$\frac{B^2 (b c - a d)^2 (b c + a d) g^3 n^2 x}{6 b^3 d^3} + \frac{B^2 (b c - a d)^2 g^2 (4 b d f - b c g - a d g) n^2 x}{4 b^3 d^3} +$$

$$\frac{B^2 (b c - a d)^2 g^3 n^2 x^2}{12 b^2 d^2} - \frac{a^3 B^2 (b c - a d) g^3 n^2 \mathrm{Log}[a + b x]}{6 b^4 d} +$$

$$\frac{a^2 B^2 (b c - a d) g^2 (4 b d f - b c g - a d g) n^2 \mathrm{Log}[a + b x]}{4 b^4 d^2} + \frac{B^2 (b f - a g)^4 n^2 \mathrm{Log}[a + b x]^2}{4 b^4 g} -$$

$$\frac{1}{2 b^4 d^3} B^2 (b c - a d) g \left(a^2 d^2 g^2 - a b d g (4 d f - c g) + b^2 \left(6 d^2 f^2 - 4 c d f g + c^2 g^2\right)\right) n (a + b x)$$

$$\mathrm{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] - \frac{B (b c - a d) g^2 (4 b d f - b c g - a d g) n x^2 \left(A + B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 b^2 d^2} -$$

$$\frac{B (b c - a d) g^3 n x^3 \left(A + B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b d} - \frac{B (b f - a g)^4 n \mathrm{Log}[a + b x] \left(A + B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^4 g} +$$

$$\frac{(f + g x)^4 \left(A + B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 g} + \frac{B^2 c^3 (b c - a d) g^3 n^2 \mathrm{Log}[c + d x]}{6 b d^4} -$$

$$\frac{B^2 c^2 (b c - a d) g^2 (4 b d f - b c g - a d g) n^2 \mathrm{Log}[c + d x]}{4 b^2 d^4} + \frac{1}{2 b^4 d^4}$$

$$B^2 (b c - a d)^2 g \left(a^2 d^2 g^2 - a b d g (4 d f - c g) + b^2 \left(6 d^2 f^2 - 4 c d f g + c^2 g^2\right)\right) n^2 \mathrm{Log}[c + d x] -$$

$$\frac{B^2 (d f - c g)^4 n^2 \mathrm{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \mathrm{Log}[c + d x]}{2 d^4 g} + \frac{B (d f - c g)^4 n \left(A + B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \mathrm{Log}[c + d x]}{2 d^4 g} +$$

$$\frac{B^2 (d f - c g)^4 n^2 \mathrm{Log}[c + d x]^2}{4 d^4 g} - \frac{B^2 (b f - a g)^4 n^2 \mathrm{Log}[a + b x] \mathrm{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{2 b^4 g} -$$

$$\frac{B^2 (b f - a g)^4 n^2 \mathrm{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{2 b^4 g} - \frac{B^2 (d f - c g)^4 n^2 \mathrm{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{2 d^4 g}$$

Problem 68: Result valid but suboptimal antiderivative.

$$\int (f + g x)^2 \left(A + B \mathrm{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right)^2 \, dx$$

Optimal (type 4, 565 leaves, 12 steps):

$$\frac{B^2 (b c - a d)^2 g^2 n^2 x}{3 b^2 d^2} - \frac{1}{3 b^3 d^2}$$

$$2 B (b c - a d) g (3 b d f - 2 b c g - a d g) n (a + b x) \left(A + B \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right) -$$

$$\frac{B (b c - a d) g^2 n (c + d x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b d^3} -$$

$$\frac{(b f - a g)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b^3 g} + \frac{(f + g x)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 g} + \frac{1}{3 b^3 d^3}$$

$$2 B (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right)$$

$$n \left(A + B \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right) \text{Log}\left[\frac{b c - a d}{b (c + d x)}\right] +$$

$$\frac{B^2 (b c - a d)^3 g^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^3 d^3} + \frac{B^2 (b c - a d)^3 g^2 n^2 \text{Log}[c + d x]}{3 b^3 d^3} +$$

$$\frac{2 B^2 (b c - a d)^2 g (3 b d f - 2 b c g - a d g) n^2 \text{Log}[c + d x]}{3 b^3 d^3} + \frac{1}{3 b^3 d^3} 2 B^2 (b c - a d)$$

$$\left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right) n^2 \text{PolyLog}\left[2, \frac{d (a + b x)}{b (c + d x)}\right]$$

Result (type 4, 699 leaves, 27 steps) :

$$-\frac{2\,A\,B\,(b\,c-a\,d)\,g\,(3\,b\,d\,f-b\,c\,g-a\,d\,g)\,n\,x}{3\,b^2\,d^2}+\frac{B^2\,(b\,c-a\,d)^2\,g^2\,n^2\,x}{3\,b^2\,d^2}+$$
$$\frac{a^2\,B^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{Log}[a+b\,x]}{3\,b^3\,d}+\frac{B^2\,(b\,f-a\,g)^3\,n^2\,\text{Log}[a+b\,x]^2}{3\,b^3\,g}-$$
$$\frac{2\,B^2\,(b\,c-a\,d)\,g\,(3\,b\,d\,f-b\,c\,g-a\,d\,g)\,n\,(a+b\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{3\,b^3\,d^2}-$$
$$\frac{B\,(b\,c-a\,d)\,g^2\,n\,x^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,d}-\frac{2\,B\,(b\,f-a\,g)^3\,n\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b^3\,g}+$$
$$\frac{(f+g\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,g}-\frac{B^2\,c^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{Log}[c+d\,x]}{3\,b\,d^3}+$$
$$\frac{2\,B^2\,(b\,c-a\,d)^2\,g\,(3\,b\,d\,f-b\,c\,g-a\,d\,g)\,n^2\,\text{Log}[c+d\,x]}{3\,b^3\,d^3}-$$
$$\frac{2\,B^2\,(d\,f-c\,g)^3\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{3\,d^3\,g}+$$
$$\frac{2\,B\,(d\,f-c\,g)^3\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{3\,d^3\,g}+$$
$$\frac{B^2\,(d\,f-c\,g)^3\,n^2\,\text{Log}[c+d\,x]^2}{3\,d^3\,g}-\frac{2\,B^2\,(b\,f-a\,g)^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b^3\,g}-$$
$$\frac{2\,B^2\,(b\,f-a\,g)^3\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,b^3\,g}-\frac{2\,B^2\,(d\,f-c\,g)^3\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,d^3\,g}$$

Problem 69: Result valid but suboptimal antiderivative.

$$\int (f+g\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 290 leaves, 9 steps):

$$-\frac{B\,(b\,c-a\,d)\,g\,n\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,d}-$$
$$\frac{(b\,f-a\,g)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,b^2\,g}+\frac{(f+g\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,g}+\frac{1}{b^2\,d^2}$$
$$B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\text{Log}[c+d\,x]}{b^2\,d^2}+\frac{B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^2\,d^2}$$

Result (type 4, 481 leaves, 23 steps):

$$-\frac{A B (b c-a d) g n x}{b d}+\frac{B^2 (b f-a g)^2 n^2 \operatorname{Log}[a+b x]^2}{2 b^2 g}-\frac{B^2 (b c-a d) g n (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{b^2 d}-\frac{B (b f-a g)^2 n \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^2 g}+\frac{(f+g x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 g}+\frac{B^2 (b c-a d)^2 g n^2 \operatorname{Log}[c+d x]}{b^2 d^2}-\frac{B^2 (d f-c g)^2 n^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d^2 g}+\frac{B (d f-c g)^2 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{d^2 g}+\frac{B^2 (d f-c g)^2 n^2 \operatorname{Log}[c+d x]^2}{2 d^2 g}-\frac{B^2 (b f-a g)^2 n^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2 g}-\frac{B^2 (b f-a g)^2 n^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^2 g}-\frac{B^2 (d f-c g)^2 n^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2 g}$$

Problem 70: Result valid but suboptimal antiderivative.

$$\int \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 135 leaves, 6 steps):

$$\frac{(a+b x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b}+\frac{2 B (b c-a d) n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b d}+\frac{2 B^2 (b c-a d) n^2 \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d}$$

Result (type 4, 275 leaves, 20 steps):

$$-\frac{a B^2 n^2 \operatorname{Log}[a+b x]^2}{b}+\frac{2 a B n \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b}+x \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2+\frac{2 B^2 c n^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d}-\frac{2 B c n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{d}-\frac{B^2 c n^2 \operatorname{Log}[c+d x]^2}{d}+\frac{2 a B^2 n^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b}+\frac{2 a B^2 n^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b}+\frac{2 B^2 c n^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d}$$

Problem 71: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{f+g x} dx$$

Optimal (type 4, 297 leaves, 9 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{g}+\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}\left[1-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{g}-$$
$$\frac{2\,B\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{g}+$$
$$\frac{2\,B\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{PolyLog}\left[2,\,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{g}+$$
$$\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{g}-\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,\,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{g}$$

Result (type 4, 2233 leaves, 43 steps):

$$-\frac{2\,A\,B\,n\,\text{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\,\text{Log}[f+g\,x]}{g}-\frac{B^2\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}[f+g\,x]}{g}+$$
$$\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}[f+g\,x]}{g}+\frac{2\,B^2\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]\,\text{Log}[f+g\,x]}{g}+$$
$$\frac{2\,B^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[f+g\,x]}{g}+\frac{2\,A\,B\,n\,\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\,\text{Log}[f+g\,x]}{g}-$$
$$\frac{2\,B^2\,n\,\left(n\,\text{Log}[a+b\,x]-\text{Log}\left[(a+b\,x)^n\right]\right)\,\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\,\text{Log}[f+g\,x]}{g}-$$
$$\frac{B^2\,\text{Log}\left[(c+d\,x)^{-n}\right]^2\,\text{Log}[f+g\,x]}{g}+\frac{1}{g}$$
$$2\,B^2\,n\,\text{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\,\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\,\text{Log}[f+g\,x]-$$
$$\frac{1}{g}2\,B^2\,n\,\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\,\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\,\text{Log}[f+g\,x]-$$
$$\frac{2\,B^2\,n\,\text{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\,\left(n\,\text{Log}[c+d\,x]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\,\text{Log}[f+g\,x]}{g}+$$
$$\frac{B^2\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+\frac{B^2\,\text{Log}\left[(c+d\,x)^{-n}\right]^2\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}+\frac{1}{g}B^2\,n^2$$
$$\left(\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{Log}\left[\frac{b\,f-a\,g}{b\,(f+g\,x)}\right]-\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]\right)\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]^2-\frac{1}{g}$$
$$B^2\,n^2\,\left(\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\right)\,\left(\text{Log}[a+b\,x]+\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)^2+\frac{1}{g}B^2\,n^2$$
$$\left(\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]+\text{Log}\left[\frac{d\,f-c\,g}{d\,(f+g\,x)}\right]-\text{Log}\left[-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]\right)\,\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]^2-$$

$$\frac{1}{g}B^2 n^2 \left(\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]-\text{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\right)\left(\text{Log}[c+d\,x]+\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\right)^2+$$

$$\frac{2\,B^2 n^2\left(\text{Log}[f+g\,x]-\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{g}+$$

$$\frac{2\,B^2\,n\,\text{Log}\left[(a+b\,x)^n\right]\text{PolyLog}\left[2,-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]}{g}+$$

$$\frac{2\,B^2 n^2\left(\text{Log}[f+g\,x]-\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g}-$$

$$\frac{2\,B^2\,n\,\text{Log}\left[(c+d\,x)^{-n}\right]\text{PolyLog}\left[2,-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]}{g}-\frac{2\,B^2 n^2\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\text{PolyLog}\left[2,\frac{g\,(a+b\,x)}{b\,(f+g\,x)}\right]}{g}+$$

$$\frac{2\,B^2 n^2\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\text{PolyLog}\left[2,-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-$$

$$\frac{2\,B^2 n^2\,\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\text{PolyLog}\left[2,\frac{g\,(c+d\,x)}{d\,(f+g\,x)}\right]}{g}+$$

$$\frac{2\,B^2 n^2\,\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-\frac{2\,A\,B\,n\,\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+\frac{1}{g}$$

$$2\,B^2\,n\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-$$

$$\frac{2\,B^2\,n\left(n\,\text{Log}[c+d\,x]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+$$

$$\frac{2\,B^2 n^2\left(\text{Log}[c+d\,x]+\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\right)\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+$$

$$\frac{2\,A\,B\,n\,\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}-\frac{2\,B^2\,n\left(n\,\text{Log}[a+b\,x]-\text{Log}\left[(a+b\,x)^n\right]\right)\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}-$$

$$\frac{1}{g}2\,B^2\,n\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+$$

$$\frac{2\,B^2 n^2\left(\text{Log}[a+b\,x]+\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}-\frac{2\,B^2 n^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{g}-$$

$$\frac{2\,B^2 n^2\,\text{PolyLog}\left[3,-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]}{g}-\frac{2\,B^2 n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g}-\frac{2\,B^2 n^2\,\text{PolyLog}\left[3,-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]}{g}-$$

$$\frac{2\,B^2 n^2\,\text{PolyLog}\left[3,\frac{g\,(a+b\,x)}{b\,(f+g\,x)}\right]}{g}+\frac{2\,B^2 n^2\,\text{PolyLog}\left[3,-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-\frac{2\,B^2 n^2\,\text{PolyLog}\left[3,\frac{g\,(c+d\,x)}{d\,(f+g\,x)}\right]}{g}+$$

$$\frac{2\,B^2 n^2\,\text{PolyLog}\left[3,\frac{(b\,f-a\,g)\,(c+d\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-\frac{2\,B^2 n^2\,\text{PolyLog}\left[3,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}-\frac{2\,B^2 n^2\,\text{PolyLog}\left[3,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}$$

Problem 72: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(f+g\,x)^2}\,dx$$

Optimal (type 4, 206 leaves, 4 steps):

$$\frac{(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,f-a\,g)\,(f+g\,x)}+\frac{2\,B\,(b\,c-a\,d)\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}+\frac{2\,B^2\,(b\,c-a\,d)\,n^2\,\text{PolyLog}\left[2,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}$$

Result (type 4, 657 leaves, 29 steps):

$$-\frac{b\,B^2\,n^2\,\text{Log}[a+b\,x]^2}{g\,(b\,f-a\,g)}+\frac{2\,b\,B\,n\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{g\,(b\,f-a\,g)}-\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{g\,(f+g\,x)}+\frac{2\,B^2\,d\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\text{Log}[c+d\,x]}{g\,(d\,f-c\,g)}-\frac{2\,B\,d\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}[c+d\,x]}{g\,(d\,f-c\,g)}-\frac{B^2\,d\,n^2\,\text{Log}[c+d\,x]^2}{g\,(d\,f-c\,g)}+\frac{2\,b\,B^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g\,(b\,f-a\,g)}-\frac{2\,B^2\,(b\,c-a\,d)\,n^2\,\text{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\text{Log}[f+g\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)}+\frac{2\,B\,(b\,c-a\,d)\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}[f+g\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)}+\frac{2\,B^2\,(b\,c-a\,d)\,n^2\,\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\text{Log}[f+g\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)}+\frac{2\,b\,B^2\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{g\,(b\,f-a\,g)}+\frac{2\,B^2\,d\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g\,(d\,f-c\,g)}-\frac{2\,B^2\,(b\,c-a\,d)\,n^2\,\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}+\frac{2\,B^2\,(b\,c-a\,d)\,n^2\,\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}$$

Problem 73: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(f+g\,x)^3}\,dx$$

Optimal (type 4, 389 leaves, 9 steps):

$$\frac{B\,(b\,c-a\,d)\,g\,n\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,f-a\,g)^2\,(d\,f-c\,g)\,(f+g\,x)}+$$

$$\frac{b^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,g\,(b\,f-a\,g)^2}-\frac{\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,g\,(f+g\,x)^2}+\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{Log}\left[\frac{f+g\,x}{c+d\,x}\right]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}+$$

$$\left(B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}\left[1-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\right)\Big/$$

$$\left((b\,f-a\,g)^2\,(d\,f-c\,g)^2\right)+\frac{B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n^2\,\mathrm{PolyLog}\left[2,\,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}$$

Result (type 4, 941 leaves, 33 steps):

$$\frac{b\,B^2\,(b\,c-a\,d)\,n^2\,\mathrm{Log}[a+b\,x]}{(b\,f-a\,g)^2\,(d\,f-c\,g)}-\frac{b^2\,B^2\,n^2\,\mathrm{Log}[a+b\,x]^2}{2\,g\,(b\,f-a\,g)^2}-\frac{B\,(b\,c-a\,d)\,n\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,f-a\,g)\,(d\,f-c\,g)\,(f+g\,x)}+$$

$$\frac{b^2\,B\,n\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{g\,(b\,f-a\,g)^2}-\frac{\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,g\,(f+g\,x)^2}-$$

$$\frac{B^2\,d\,(b\,c-a\,d)\,n^2\,\mathrm{Log}[c+d\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)^2}+\frac{B^2\,d^2\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{g\,(d\,f-c\,g)^2}-$$

$$\frac{B\,d^2\,n\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[c+d\,x]}{g\,(d\,f-c\,g)^2}-\frac{B^2\,d^2\,n^2\,\mathrm{Log}[c+d\,x]^2}{2\,g\,(d\,f-c\,g)^2}+$$

$$\frac{b^2\,B^2\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g\,(b\,f-a\,g)^2}+\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{Log}[f+g\,x]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}-$$

$$\frac{B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n^2\,\mathrm{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\,\mathrm{Log}[f+g\,x]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}+$$

$$\left(B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[f+g\,x]\right)\Big/$$

$$\left((b\,f-a\,g)^2\,(d\,f-c\,g)^2\right)+\frac{B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n^2\,\mathrm{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\,\mathrm{Log}[f+g\,x]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}+$$

$$\frac{b^2\,B^2\,n^2\,\mathrm{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{g\,(b\,f-a\,g)^2}+\frac{B^2\,d^2\,n^2\,\mathrm{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g\,(d\,f-c\,g)^2}-$$

$$\frac{B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n^2\,\mathrm{PolyLog}\left[2,\,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}+$$

$$\frac{B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n^2\,\mathrm{PolyLog}\left[2,\,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}$$

Problem 74: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(f+g\,x)^4}\,dx$$

Optimal (type 4, 747 leaves, 12 steps):

$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,n^2\,(c+d\,x)}{3\,(b\,f-a\,g)^2\,(d\,f-c\,g)^3\,(f+g\,x)}-\frac{B\,(b\,c-a\,d)\,g^2\,n\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,f-a\,g)\,(d\,f-c\,g)^3\,(f+g\,x)^2}+$$
$$\left(2\,B\,(b\,c-a\,d)\,g\,(3\,b\,d\,f-b\,c\,g-2\,a\,d\,g)\,n\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\right)\Big/$$
$$\left(3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^2\,(f+g\,x)\right)+\frac{b^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,g\,(b\,f-a\,g)^3}-$$
$$\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,g\,(f+g\,x)^3}+\frac{B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3}-\frac{B^2\,(b\,c-a\,d)^3\,g^2\,n^2\,\text{Log}\left[\frac{f+g\,x}{c+d\,x}\right]}{3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3}+$$
$$\frac{2\,B^2\,(b\,c-a\,d)^2\,g\,(3\,b\,d\,f-b\,c\,g-2\,a\,d\,g)\,n^2\,\text{Log}\left[\frac{f+g\,x}{c+d\,x}\right]}{3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3}+$$
$$\Big(2\,B\,(b\,c-a\,d)\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2)\right)\,n$$
$$\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\Big)\Big/\left(3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3\right)+$$
$$\Big(2\,B^2\,(b\,c-a\,d)\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2)\right)$$
$$n^2\,\text{PolyLog}\left[2,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\Big)\Big/\left(3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3\right)$$

Result (type 4, 1427 leaves, 37 steps):

$$-\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2}{3\,(b\,f-a\,g)^2\,(d\,f-c\,g)^2\,(f+g\,x)}+\frac{b^2\,B^2\,(b\,c-a\,d)\,n^2\,\text{Log}[a+b\,x]}{3\,(b\,f-a\,g)^3\,(d\,f-c\,g)}+$$
$$\frac{2\,b\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n^2\,\text{Log}[a+b\,x]}{3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^2}-$$
$$\frac{b^3\,B^2\,n^2\,\text{Log}[a+b\,x]^2}{3\,g\,(b\,f-a\,g)^3}-\frac{B\,(b\,c-a\,d)\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,f-a\,g)\,(d\,f-c\,g)\,(f+g\,x)^2}-$$
$$\frac{2\,B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,f-a\,g)^2\,(d\,f-c\,g)^2\,(f+g\,x)}+$$
$$\frac{2\,b^3\,B\,n\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,g\,(b\,f-a\,g)^3}-\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,g\,(f+g\,x)^3}-$$

$$\frac{B^2 d^2 (b c-a d) n^2 \operatorname{Log}[c+d x]}{3 (b f-a g) (d f-c g)^3}-\frac{2 B^2 d (b c-a d) (2 b d f-b c g-a d g) n^2 \operatorname{Log}[c+d x]}{3 (b f-a g)^2 (d f-c g)^3}+$$

$$\frac{2 B^2 d^3 n^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{3 g (d f-c g)^3}-\frac{2 B d^3 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{3 g (d f-c g)^3}-$$

$$\frac{B^2 d^3 n^2 \operatorname{Log}[c+d x]^2}{3 g (d f-c g)^3}+\frac{2 b^3 B^2 n^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 g (b f-a g)^3}+$$

$$\frac{B^2 (b c-a d)^2 g (2 b d f-b c g-a d g) n^2 \operatorname{Log}[f+g x]}{(b f-a g)^3 (d f-c g)^3}-$$

$$\left(2 B^2 (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) n^2 \operatorname{Log}\left[-\frac{g (a+b x)}{b f-a g}\right] \operatorname{Log}[f+g x]\right) \Big/ \left(3 (b f-a g)^3 (d f-c g)^3\right)+$$

$$\left(2 B (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[f+g x]\right) \Big/ \left(3 (b f-a g)^3 (d f-c g)^3\right)+$$

$$\left(2 B^2 (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) n^2 \operatorname{Log}\left[-\frac{g (c+d x)}{d f-c g}\right] \operatorname{Log}[f+g x]\right) \Big/ \left(3 (b f-a g)^3 (d f-c g)^3\right)+$$

$$\frac{2 b^3 B^2 n^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 g (b f-a g)^3}+\frac{2 B^2 d^3 n^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 g (d f-c g)^3}-$$

$$\left(2 B^2 (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) n^2 \operatorname{PolyLog}\left[2,\frac{b (f+g x)}{b f-a g}\right]\right) \Big/ \left(3 (b f-a g)^3 (d f-c g)^3\right)+$$

$$\left(2 B^2 (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) n^2 \operatorname{PolyLog}\left[2,\frac{d (f+g x)}{d f-c g}\right]\right) \Big/ \left(3 (b f-a g)^3 (d f-c g)^3\right)$$

Problem 75: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(f+g x)^5} \, dx$$

Optimal (type 4, 1208 leaves, 15 steps):

$$-\frac{B^2 (b c-a d)^2 g^3 n^2 (c+d x)^2}{12 (b f-a g)^2 (d f-c g)^4 (f+g x)^2}-\frac{B^2 (b c-a d)^3 g^3 n^2 (c+d x)}{6 (b f-a g)^3 (d f-c g)^4 (f+g x)}+$$

$$\frac{B^2 (b c-a d)^2 g^2 (4 b d f-b c g-3 a d g) n^2 (c+d x)}{4 (b f-a g)^3 (d f-c g)^4 (f+g x)}+$$

$$\frac{B (b c-a d) g^3 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 (b f-a g) (d f-c g)^4 (f+g x)^3}-$$

$$\left(B (b c-a d) g^2 (4 b d f-b c g-3 a d g) n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)\right)\Big/$$
$$\left(4 (b f-a g)^2 (d f-c g)^4 (f+g x)^2\right)+$$

$$\left(B (b c-a d) g \left(3 a^2 d^2 g^2-2 a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right)\right.$$
$$\left.n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)\right)\Big/\left(2 (b f-a g)^4 (d f-c g)^3 (f+g x)\right)+$$

$$\frac{b^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 g (b f-a g)^4}-\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 g (f+g x)^4}-\frac{B^2 (b c-a d)^4 g^3 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{6 (b f-a g)^4 (d f-c g)^4}+$$

$$\frac{B^2 (b c-a d)^3 g^2 (4 b d f-b c g-3 a d g) n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{4 (b f-a g)^4 (d f-c g)^4}+$$

$$\frac{B^2 (b c-a d)^4 g^3 n^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{6 (b f-a g)^4 (d f-c g)^4}-\frac{B^2 (b c-a d)^3 g^2 (4 b d f-b c g-3 a d g) n^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{4 (b f-a g)^4 (d f-c g)^4}+$$

$$\left(B^2 (b c-a d)^2 g \left(3 a^2 d^2 g^2-2 a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right) n^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]\right)\Big/$$
$$\left(2 (b f-a g)^4 (d f-c g)^4\right)-$$

$$\left(B (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right) n\right.$$
$$\left.\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1-\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]\right)\Big/\left(2 (b f-a g)^4 (d f-c g)^4\right)-$$

$$\left(B^2 (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right)\right.$$
$$\left.n^2 \text{PolyLog}\left[2,\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]\right)\Big/\left(2 (b f-a g)^4 (d f-c g)^4\right)$$

Result (type 4, 1968 leaves, 41 steps):

$$-\frac{B^2 (b c-a d)^2 g n^2}{12 (b f-a g)^2 (d f-c g)^2 (f+g x)^2}-\frac{5 B^2 (b c-a d)^2 g (2 b d f-b c g-a d g) n^2}{12 (b f-a g)^3 (d f-c g)^3 (f+g x)}+$$

$$\frac{b^3 B^2 (b c-a d) n^2 \text{Log}[a+b x]}{6 (b f-a g)^4 (d f-c g)}+\frac{b^2 B^2 (b c-a d) (2 b d f-b c g-a d g) n^2 \text{Log}[a+b x]}{4 (b f-a g)^4 (d f-c g)^2}+$$

$$\left(b B^2 (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) n^2 \text{Log}[a+b x]\right)\Big/$$

$$\left(2\,(b f-a g)^4\,(d f-c g)^3\right)-\frac{b^4 B^2 n^2 \text{Log}[a+b x]^2}{4 g\,(b f-a g)^4}-\frac{B\,(b c-a d)\,n\,\left(A+B \text{Log}\left[e\,\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6\,(b f-a g)\,(d f-c g)\,(f+g x)^3}-$$

$$\frac{B\,(b c-a d)\,(2 b d f-b c g-a d g)\,n\,\left(A+B \text{Log}\left[e\,\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4\,(b f-a g)^2\,(d f-c g)^2\,(f+g x)^2}-$$

$$\left(B\,(b c-a d)\,\left(a^2 d^2 g^2-a b d g\,(3 d f-c g)+b^2\,\left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right)\right.$$
$$\left.n\,\left(A+B \text{Log}\left[e\,\left(\frac{a+b x}{c+d x}\right)^n\right]\right)\right)\Big/\left(2\,(b f-a g)^3\,(d f-c g)^3\,(f+g x)\right)+$$

$$\frac{b^4 B n \text{Log}[a+b x]\,\left(A+B \text{Log}\left[e\,\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 g\,(b f-a g)^4}-\frac{\left(A+B \text{Log}\left[e\,\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 g\,(f+g x)^4}-$$

$$\frac{B^2 d^3\,(b c-a d)\,n^2 \text{Log}[c+d x]}{6\,(b f-a g)\,(d f-c g)^4}-\frac{B^2 d^2\,(b c-a d)\,(2 b d f-b c g-a d g)\,n^2 \text{Log}[c+d x]}{4\,(b f-a g)^2\,(d f-c g)^4}-$$

$$\left(B^2 d\,(b c-a d)\,\left(a^2 d^2 g^2-a b d g\,(3 d f-c g)+b^2\,\left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right)\,n^2 \text{Log}[c+d x]\right)\Big/$$
$$\left(2\,(b f-a g)^3\,(d f-c g)^4\right)+\frac{B^2 d^4 n^2 \text{Log}\left[-\frac{d\,(a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{2 g\,(d f-c g)^4}-$$

$$\frac{B d^4 n\,\left(A+B \text{Log}\left[e\,\left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{2 g\,(d f-c g)^4}-\frac{B^2 d^4 n^2 \text{Log}[c+d x]^2}{4 g\,(d f-c g)^4}+$$

$$\frac{b^4 B^2 n^2 \text{Log}[a+b x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]}{2 g\,(b f-a g)^4}+\frac{B^2\,(b c-a d)^2 g\,(2 b d f-b c g-a d g)^2 n^2 \text{Log}[f+g x]}{4\,(b f-a g)^4\,(d f-c g)^4}+$$

$$\left(2 B^2\,(b c-a d)^2 g\,\left(a^2 d^2 g^2-a b d g\,(3 d f-c g)+b^2\,\left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right)\,n^2 \text{Log}[f+g x]\right)\Big/$$
$$\left(3\,(b f-a g)^4\,(d f-c g)^4\right)+$$

$$\left(B^2\,(b c-a d)\,(2 b d f-b c g-a d g)\,\left(2 a b d^2 f g-a^2 d^2 g^2-b^2\,\left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right)\right.$$
$$\left.n^2 \text{Log}\left[-\frac{g\,(a+b x)}{b f-a g}\right] \text{Log}[f+g x]\right)\Big/\left(2\,(b f-a g)^4\,(d f-c g)^4\right)-$$

$$\left(B\,(b c-a d)\,(2 b d f-b c g-a d g)\,\left(2 a b d^2 f g-a^2 d^2 g^2-b^2\,\left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right)\right.$$
$$\left.n\,\left(A+B \text{Log}\left[e\,\left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[f+g x]\right)\Big/\left(2\,(b f-a g)^4\,(d f-c g)^4\right)-$$

$$\left(B^2\,(b c-a d)\,(2 b d f-b c g-a d g)\,\left(2 a b d^2 f g-a^2 d^2 g^2-b^2\,\left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right)\right.$$
$$\left.n^2 \text{Log}\left[-\frac{g\,(c+d x)}{d f-c g}\right] \text{Log}[f+g x]\right)\Big/\left(2\,(b f-a g)^4\,(d f-c g)^4\right)+$$

$$\frac{b^4 B^2 n^2 \text{PolyLog}\left[2,-\frac{d\,(a+b x)}{b c-a d}\right]}{2 g\,(b f-a g)^4}+\frac{B^2 d^4 n^2 \text{PolyLog}\left[2,\frac{b\,(c+d x)}{b c-a d}\right]}{2 g\,(d f-c g)^4}+$$

$$\left(B^2\,(b c-a d)\,(2 b d f-b c g-a d g)\,\left(2 a b d^2 f g-a^2 d^2 g^2-b^2\,\left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right)\right.$$

$$n^2\,\mathrm{PolyLog}\left[2, \frac{b\,(f+g\,x)}{b\,f-a\,g}\right]\Big) \Big/ \left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right) -$$

$$\Big(B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(2\,a\,b\,d^2\,f\,g-a^2\,d^2\,g^2-b^2\,(2\,d^2\,f^2-2\,c\,d\,f\,g+c^2\,g^2)\right)$$

$$n^2\,\mathrm{PolyLog}\left[2, \frac{d\,(f+g\,x)}{d\,f-c\,g}\right]\Big) \Big/ \left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right)$$

Problem 76: Result valid but suboptimal antiderivative.

$$\int \frac{(f+g\,x)^2}{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\mathrm{Unintegrable}\left[\frac{(f+g\,x)^2}{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}, x\right]$$

Result (type 8, 97 leaves, 2 steps):

$$f^2\,\mathrm{CannotIntegrate}\left[\frac{1}{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}, x\right] +$$

$$2\,f\,g\,\mathrm{CannotIntegrate}\left[\frac{x}{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}, x\right] + g^2\,\mathrm{CannotIntegrate}\left[\frac{x^2}{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}, x\right]$$

Problem 77: Result valid but suboptimal antiderivative.

$$\int \frac{f+g\,x}{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}\,dx$$

Optimal (type 8, 32 leaves, 0 steps):

$$\mathrm{Unintegrable}\left[\frac{f+g\,x}{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}, x\right]$$

Result (type 8, 59 leaves, 2 steps):

$$f\,\mathrm{CannotIntegrate}\left[\frac{1}{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}, x\right] + g\,\mathrm{CannotIntegrate}\left[\frac{x}{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}, x\right]$$

Problem 78: Result valid but suboptimal antiderivative.

$$\int \frac{1}{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}\,dx$$

Optimal (type 8, 26 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]},\ x\right]$$

Result (type 8, 26 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]},\ x\right]$$

Problem 79: Result valid but suboptimal antiderivative.

$$\int\frac{1}{(f+g\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)},\ x\right]$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)},\ x\right]$$

Problem 80: Result valid but suboptimal antiderivative.

$$\int\frac{1}{(f+g\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)},\ x\right]$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)},\ x\right]$$

Problem 81: Result valid but suboptimal antiderivative.

$$\int\frac{1}{(f+g\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)},\ x\right]$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)},\,x\right]$$

Problem 82: Result valid but suboptimal antiderivative.

$$\int\frac{(f+g\,x)^2}{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(f+g\,x)^2}{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Result (type 8, 97 leaves, 2 steps):

$$f^2\,\text{CannotIntegrate}\left[\frac{1}{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]+$$
$$2\,f\,g\,\text{CannotIntegrate}\left[\frac{x}{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]+$$
$$g^2\,\text{CannotIntegrate}\left[\frac{x^2}{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Problem 83: Result valid but suboptimal antiderivative.

$$\int\frac{f+g\,x}{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}\,dx$$

Optimal (type 8, 32 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{f+g\,x}{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Result (type 8, 59 leaves, 2 steps):

$$f\,\text{CannotIntegrate}\left[\frac{1}{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]+g\,\text{CannotIntegrate}\left[\frac{x}{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Problem 84: Result valid but suboptimal antiderivative.

$$\int\frac{1}{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}\,dx$$

Optimal (type 8, 26 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Result (type 8, 26 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Problem 85: Result valid but suboptimal antiderivative.

$$\int\frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Problem 86: Result valid but suboptimal antiderivative.

$$\int\frac{1}{(f+g\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Problem 87: Result valid but suboptimal antiderivative.

$$\int\frac{1}{(f+g\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Problem 92: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 80 leaves, 5 steps):

$$-\frac{\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b\,g}+\frac{B\,\text{PolyLog}\left[2,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b\,g}$$

Result (type 4, 120 leaves, 10 steps):

$$-\frac{B\,\text{Log}[g\,(a+b\,x)]^2}{2\,b\,g}+\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{Log}[a\,g+b\,g\,x]}{b\,g}+\frac{B\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\text{Log}[a\,g+b\,g\,x]}{b\,g}+\frac{B\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}$$

Problem 93: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 3, 63 leaves, 2 steps):

$$-\frac{B}{b\,g^2\,(a+b\,x)}-\frac{(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}$$

Result (type 3, 102 leaves, 4 steps):

$$-\frac{B}{b\,g^2\,(a+b\,x)}-\frac{B\,d\,\text{Log}[a+b\,x]}{b\,(b\,c-a\,d)\,g^2}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b\,g^2\,(a+b\,x)}+\frac{B\,d\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)\,g^2}$$

Problem 97: Result valid but suboptimal antiderivative.

$$\int(a\,g+b\,g\,x)^4\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,dx$$

Optimal (type 4, 365 leaves, 8 steps):

$$-\frac{B\,(b\,c-a\,d)\,g^4\,(a+b\,x)^4\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{10\,b\,d}+\frac{g^4\,(a+b\,x)^5\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{5\,b}+\frac{B\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3\left(4\,A+B+4\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{30\,b\,d^2}-\frac{B\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2\left(12\,A+7\,B+12\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{60\,b\,d^3}+\frac{B\,(b\,c-a\,d)^4\,g^4\,(a+b\,x)\left(12\,A+13\,B+12\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{30\,b\,d^4}+\frac{B\,(b\,c-a\,d)^5\,g^4\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(12\,A+25\,B+12\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{30\,b\,d^5}+\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{5\,b\,d^5}$$

Result (type 4, 557 leaves, 28 steps):

$$\frac{2\,A\,B\,(b\,c-a\,d)^4\,g^4\,x}{5\,d^4}+\frac{13\,B^2\,(b\,c-a\,d)^4\,g^4\,x}{30\,d^4}-\frac{7\,B^2\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}{60\,b\,d^3}+\frac{B^2\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3}{30\,b\,d^2}+\frac{2\,B^2\,(b\,c-a\,d)^4\,g^4\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{5\,b\,d^4}-\frac{B\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,b\,d^3}+\frac{2\,B\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{15\,b\,d^2}-\frac{B\,(b\,c-a\,d)\,g^4\,(a+b\,x)^4\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{10\,b\,d}+\frac{g^4\,(a+b\,x)^5\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{5\,b}-\frac{5\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}[c+d\,x]}{6\,b\,d^5}+\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\text{Log}[c+d\,x]}{5\,b\,d^5}-\frac{2\,B\,(b\,c-a\,d)^5\,g^4\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{Log}[c+d\,x]}{5\,b\,d^5}-\frac{B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}[c+d\,x]^2}{5\,b\,d^5}+\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{5\,b\,d^5}$$

Problem 98: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,dx$$

Optimal (type 4, 309 leaves, 7 steps):

$$-\frac{B\,(b\,c-a\,d)\,g^3\,(a+b\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,b\,d}+\frac{g^3\,(a+b\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,b}+\frac{B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)^2\,\left(3\,A+B+3\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{12\,b\,d^2}-\frac{B\,(b\,c-a\,d)^3\,g^3\,(a+b\,x)\,\left(6\,A+5\,B+6\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{12\,b\,d^3}-\frac{B\,(b\,c-a\,d)^4\,g^3\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(6\,A+11\,B+6\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{12\,b\,d^4}-\frac{B^2\,(b\,c-a\,d)^4\,g^3\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{2\,b\,d^4}$$

Result (type 4, 474 leaves, 24 steps):

$$-\frac{A\,B\,(b\,c-a\,d)^3\,g^3\,x}{2\,d^3}-\frac{5\,B^2\,(b\,c-a\,d)^3\,g^3\,x}{12\,d^3}+\frac{B^2\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)^2}{12\,b\,d^2}-\frac{B^2\,(b\,c-a\,d)^3\,g^3\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{2\,b\,d^3}+\frac{B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b\,d^2}-\frac{B\,(b\,c-a\,d)\,g^3\,(a+b\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,b\,d}+\frac{g^3\,(a+b\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,b}+\frac{11\,B^2\,(b\,c-a\,d)^4\,g^3\,\text{Log}[c+d\,x]}{12\,b\,d^4}-\frac{B^2\,(b\,c-a\,d)^4\,g^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{2\,b\,d^4}+\frac{B\,(b\,c-a\,d)^4\,g^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{2\,b\,d^4}+\frac{B^2\,(b\,c-a\,d)^4\,g^3\,\text{Log}[c+d\,x]^2}{4\,b\,d^4}-\frac{B^2\,(b\,c-a\,d)^4\,g^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{2\,b\,d^4}$$

Problem 99: Result valid but suboptimal antiderivative.

$$\int(a\,g+b\,g\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,dx$$

Optimal (type 4, 253 leaves, 6 steps):

$$-\frac{B\,(b\,c-a\,d)\,g^2\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,d}+\frac{g^2\,(a+b\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,b}+\frac{B\,(b\,c-a\,d)^2\,g^2\,(a+b\,x)\,\left(2\,A+B+2\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,d^2}+\frac{B\,(b\,c-a\,d)^3\,g^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(2\,A+3\,B+2\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,d^3}+\frac{2\,B^2\,(b\,c-a\,d)^3\,g^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{3\,b\,d^3}$$

Result (type 4, 389 leaves, 20 steps):

$$\frac{2\,A\,B\,(b\,c-a\,d)^2\,g^2\,x}{3\,d^2}+\frac{B^2\,(b\,c-a\,d)^2\,g^2\,x}{3\,d^2}+\frac{2\,B^2\,(b\,c-a\,d)^2\,g^2\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{3\,b\,d^2}-$$
$$\frac{B\,(b\,c-a\,d)\,g^2\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,d}+\frac{g^2\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,b}-$$
$$\frac{B^2\,(b\,c-a\,d)^3\,g^2\,\mathrm{Log}[c+d\,x]}{b\,d^3}+\frac{2\,B^2\,(b\,c-a\,d)^3\,g^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{3\,b\,d^3}-$$
$$\frac{2\,B\,(b\,c-a\,d)^3\,g^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]}{3\,b\,d^3}-$$
$$\frac{B^2\,(b\,c-a\,d)^3\,g^2\,\mathrm{Log}[c+d\,x]^2}{3\,b\,d^3}+\frac{2\,B^2\,(b\,c-a\,d)^3\,g^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b\,d^3}$$

Problem 100: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,dx$$

Optimal (type 4, 180 leaves, 5 steps):

$$-\frac{B\,(b\,c-a\,d)\,g\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b\,d}+\frac{g\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,b}-$$
$$\frac{B\,(b\,c-a\,d)^2\,g\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b\,d^2}-\frac{B^2\,(b\,c-a\,d)^2\,g\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,d^2}$$

Result (type 4, 285 leaves, 16 steps):

$$-\frac{A\,B\,(b\,c-a\,d)\,g\,x}{d}-\frac{B^2\,(b\,c-a\,d)\,g\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b\,d}+$$
$$\frac{g\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,b}+\frac{B^2\,(b\,c-a\,d)^2\,g\,\mathrm{Log}[c+d\,x]}{b\,d^2}-$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{b\,d^2}+\frac{B\,(b\,c-a\,d)^2\,g\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]}{b\,d^2}+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g\,\mathrm{Log}[c+d\,x]^2}{2\,b\,d^2}-\frac{B^2\,(b\,c-a\,d)^2\,g\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,d^2}$$

Problem 101: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 128 leaves, 4 steps):

$$-\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+\frac{2\,B\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+\frac{2\,B^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}$$

Result (type 4, 728 leaves, 46 steps):

$$-\frac{A\,B\,\text{Log}\left[g\,(a+b\,x)\right]^2}{b\,g}+\frac{B^2\,\text{Log}\left[g\,(a+b\,x)\right]^3}{3\,b\,g}-\frac{B^2\,\text{Log}[a+b\,x]^2\,\text{Log}[-c-d\,x]}{b\,g}+$$
$$\frac{2\,B^2\,\text{Log}[a+b\,x]\,\text{Log}\left[g\,(a+b\,x)\right]\,\text{Log}[-c-d\,x]}{b\,g}-\frac{B^2\,\text{Log}\left[g\,(a+b\,x)\right]^2\,\text{Log}[-c-d\,x]}{b\,g}+$$
$$\frac{B^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[\frac{1}{c+d\,x}\right]^2}{b\,g}-\frac{B^2\,\text{Log}\left[g\,(a+b\,x)\right]\,\text{Log}\left[\frac{1}{c+d\,x}\right]^2}{b\,g}+$$
$$\frac{B^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}+\frac{B^2\,\text{Log}\left[g\,(a+b\,x)\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}+$$
$$\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}[a\,g+b\,g\,x]}{b\,g}+\frac{2\,A\,B\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]}{b\,g}-\frac{1}{b\,g}$$
$$2\,B^2\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]-$$
$$\frac{B^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b\,g}-\frac{B^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b\,g}+$$
$$\frac{2\,A\,B\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}+\frac{2\,B^2\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}-$$
$$\frac{2\,B^2\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}-$$
$$\frac{2\,B^2\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}-\frac{2\,B^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}-\frac{2\,B^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}$$

Problem 102: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 3, 126 leaves, 3 steps):

$$-\frac{2\,B^2\,(c+d\,x)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{2\,B\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)\,g^2\,(a+b\,x)}$$

Result (type 4, 470 leaves, 26 steps):

$$-\frac{2 B^2}{b g^2 (a+b x)}-\frac{2 B^2 d \operatorname{Log}[a+b x]}{b (b c-a d) g^2}+\frac{B^2 d \operatorname{Log}[a+b x]^2}{b (b c-a d) g^2}-\frac{2 B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b g^2 (a+b x)}-$$
$$\frac{2 B d \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b (b c-a d) g^2}-\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b g^2 (a+b x)}+\frac{2 B^2 d \operatorname{Log}[c+d x]}{b (b c-a d) g^2}-$$
$$\frac{2 B^2 d \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{b (b c-a d) g^2}+\frac{2 B d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{b (b c-a d) g^2}+\frac{B^2 d \operatorname{Log}[c+d x]^2}{b (b c-a d) g^2}-$$
$$\frac{2 B^2 d \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d) g^2}-\frac{2 B^2 d \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b (b c-a d) g^2}-\frac{2 B^2 d \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d) g^2}$$

Problem 103: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^3} \, dx$$

Optimal (type 3, 268 leaves, 7 steps):

$$\frac{2 B^2 d (c+d x)}{(b c-a d)^2 g^3 (a+b x)}-\frac{b B^2 (c+d x)^2}{4 (b c-a d)^2 g^3 (a+b x)^2}+$$
$$\frac{2 B d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^2 g^3 (a+b x)}-\frac{b B (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^2 g^3 (a+b x)^2}+$$
$$\frac{d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^2 g^3 (a+b x)}-\frac{b (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^2 g^3 (a+b x)^2}$$

Result (type 4, 577 leaves, 30 steps):

$$-\frac{B^2}{4 b g^3 (a+b x)^2}+\frac{3 B^2 d}{2 b (b c-a d) g^3 (a+b x)}+\frac{3 B^2 d^2 \operatorname{Log}[a+b x]}{2 b (b c-a d)^2 g^3}-$$
$$\frac{B^2 d^2 \operatorname{Log}[a+b x]^2}{2 b (b c-a d)^2 g^3}-\frac{B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b g^3 (a+b x)^2}+\frac{B d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b (b c-a d) g^3 (a+b x)}+$$
$$\frac{B d^2 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b (b c-a d)^2 g^3}-\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b g^3 (a+b x)^2}-\frac{3 B^2 d^2 \operatorname{Log}[c+d x]}{2 b (b c-a d)^2 g^3}+$$
$$\frac{B^2 d^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{b (b c-a d)^2 g^3}-\frac{B d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{b (b c-a d)^2 g^3}-\frac{B^2 d^2 \operatorname{Log}[c+d x]^2}{2 b (b c-a d)^2 g^3}+$$
$$\frac{B^2 d^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^2 g^3}+\frac{B^2 d^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b (b c-a d)^2 g^3}+\frac{B^2 d^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^2 g^3}$$

Problem 104: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 3, 418 leaves, 9 steps):

$$-\frac{2\,B^2\,d^2\,(c+d\,x)}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)}+\frac{b\,B^2\,d\,(c+d\,x)^2}{2\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}-\frac{2\,b^2\,B^2\,(c+d\,x)^3}{27\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^3}-\frac{2\,B\,d^2\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)}+\frac{b\,B\,d\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}-\frac{2\,b^2\,B\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{9\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^3}-\frac{d^2\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)}+\frac{b\,d\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}-\frac{b^2\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^3}$$

Result (type 4, 680 leaves, 34 steps):

$$-\frac{2\,B^2}{27\,b\,g^4\,(a+b\,x)^3}+\frac{5\,B^2\,d}{18\,b\,(b\,c-a\,d)\,g^4\,(a+b\,x)^2}-\frac{11\,B^2\,d^2}{9\,b\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)}-\frac{11\,B^2\,d^3\,\text{Log}[a+b\,x]}{9\,b\,(b\,c-a\,d)^3\,g^4}+\frac{B^2\,d^3\,\text{Log}[a+b\,x]^2}{3\,b\,(b\,c-a\,d)^3\,g^4}-\frac{2\,B\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{9\,b\,g^4\,(a+b\,x)^3}+\frac{B\,d\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,(b\,c-a\,d)\,g^4\,(a+b\,x)^2}-\frac{2\,B\,d^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)}-\frac{2\,B\,d^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,(b\,c-a\,d)^3\,g^4}-\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,b\,g^4\,(a+b\,x)^3}+\frac{11\,B^2\,d^3\,\text{Log}[c+d\,x]}{9\,b\,(b\,c-a\,d)^3\,g^4}-\frac{2\,B^2\,d^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{3\,b\,(b\,c-a\,d)^3\,g^4}+\frac{2\,B\,d^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{3\,b\,(b\,c-a\,d)^3\,g^4}+\frac{B^2\,d^3\,\text{Log}[c+d\,x]^2}{3\,b\,(b\,c-a\,d)^3\,g^4}-\frac{2\,B^2\,d^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b\,(b\,c-a\,d)^3\,g^4}-\frac{2\,B^2\,d^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,b\,(b\,c-a\,d)^3\,g^4}-\frac{2\,B^2\,d^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b\,(b\,c-a\,d)^3\,g^4}$$

Problem 105: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^5}\,dx$$

Optimal (type 3, 575 leaves, 11 steps):

$$\frac{2 B^2 d^3 (c+d x)}{(b c-a d)^4 g^5 (a+b x)}-\frac{3 b B^2 d^2 (c+d x)^2}{4 (b c-a d)^4 g^5 (a+b x)^2}+\frac{2 b^2 B^2 d (c+d x)^3}{9 (b c-a d)^4 g^5 (a+b x)^3}-\frac{b^3 B^2 (c+d x)^4}{32 (b c-a d)^4 g^5 (a+b x)^4}+\frac{2 B d^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^5 (a+b x)}-\frac{3 b B d^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^4 g^5 (a+b x)^2}+\frac{2 b^2 B d (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b c-a d)^4 g^5 (a+b x)^3}-\frac{b^3 B (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{8 (b c-a d)^4 g^5 (a+b x)^4}+\frac{d^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^4 g^5 (a+b x)}-\frac{3 b d^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^4 g^5 (a+b x)^2}+\frac{b^2 d (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^4 g^5 (a+b x)^3}-\frac{b^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 (b c-a d)^4 g^5 (a+b x)^4}$$

Result (type 4, 763 leaves, 38 steps):

$$-\frac{B^2}{32 b g^5 (a+b x)^4}+\frac{7 B^2 d}{72 b (b c-a d) g^5 (a+b x)^3}-\frac{13 B^2 d^2}{48 b (b c-a d)^2 g^5 (a+b x)^2}+\frac{25 B^2 d^3}{24 b (b c-a d)^3 g^5 (a+b x)}+\frac{25 B^2 d^4 \text{Log}[a+b x]}{24 b (b c-a d)^4 g^5}-\frac{B^2 d^4 \text{Log}[a+b x]^2}{4 b (b c-a d)^4 g^5}-\frac{B \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{8 b g^5 (a+b x)^4}+\frac{B d \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b (b c-a d) g^5 (a+b x)^3}-\frac{B d^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 b (b c-a d)^2 g^5 (a+b x)^2}+\frac{B d^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b (b c-a d)^3 g^5 (a+b x)}+\frac{B d^4 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b (b c-a d)^4 g^5}-\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b g^5 (a+b x)^4}-\frac{25 B^2 d^4 \text{Log}[c+d x]}{24 b (b c-a d)^4 g^5}+\frac{B^2 d^4 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{2 b (b c-a d)^4 g^5}-\frac{B d^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{2 b (b c-a d)^4 g^5}-\frac{B^2 d^4 \text{Log}[c+d x]^2}{4 b (b c-a d)^4 g^5}+\frac{B^2 d^4 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{2 b (b c-a d)^4 g^5}+\frac{B^2 d^4 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{2 b (b c-a d)^4 g^5}+\frac{B^2 d^4 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{2 b (b c-a d)^4 g^5}$$

Problem 109: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2}{A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]} \, dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(a g+b g x)^2}{A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}, x\right]$$

Result (type 8, 97 leaves, 2 steps):

$$a^2 g^2 \,\text{CannotIntegrate}\left[\frac{1}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},\,x\right]+$$
$$2\,a\,b\,g^2\,\text{CannotIntegrate}\left[\frac{x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},\,x\right]+b^2 g^2\,\text{CannotIntegrate}\left[\frac{x^2}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},\,x\right]$$

Problem 110: Result valid but suboptimal antiderivative.

$$\int \frac{a\,g+b\,g\,x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}\,dx$$

Optimal (type 8, 32 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{a\,g+b\,g\,x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},\,x\right]$$

Result (type 8, 55 leaves, 2 steps):

$$a\,g\,\text{CannotIntegrate}\left[\frac{1}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},\,x\right]+b\,g\,\text{CannotIntegrate}\left[\frac{x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},\,x\right]$$

Problem 111: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)},\,x\right]$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)},\,x\right]$$

Problem 112: Unable to integrate problem.

$$\int \frac{1}{(a\,g+b\,g\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}\,dx$$

Optimal (type 4, 50 leaves, 3 steps):

$$\frac{e\,e^{A/B}\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{B}\right]}{B\,(b\,c-a\,d)\,g^2}$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)},\,x\right]$$

Problem 113: Unable to integrate problem.

$$\int\frac{1}{(a\,g+b\,g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}\,dx$$

Optimal (type 4, 107 leaves, 7 steps):

$$\frac{b\,e^2\,e^{\frac{2A}{B}}\,\text{ExpIntegralEi}\left[-\frac{2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{B}\right]}{B\,(b\,c-a\,d)^2\,g^3}-\frac{d\,e\,e^{A/B}\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{B}\right]}{B\,(b\,c-a\,d)^2\,g^3}$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)},\,x\right]$$

Problem 114: Result valid but suboptimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^2}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(a\,g+b\,g\,x)^2}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Result (type 8, 97 leaves, 2 steps):

$$a^2\,g^2\,\text{CannotIntegrate}\left[\frac{1}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]+$$
$$2\,a\,b\,g^2\,\text{CannotIntegrate}\left[\frac{x}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]+$$
$$b^2\,g^2\,\text{CannotIntegrate}\left[\frac{x^2}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Problem 115: Result valid but suboptimal antiderivative.

$$\int\frac{a\,g+b\,g\,x}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}\,dx$$

Optimal (type 8, 32 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{a\,g+b\,g\,x}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Result (type 8, 55 leaves, 2 steps):

$$a\,g\,\text{CannotIntegrate}\left[\frac{1}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]+b\,g\,\text{CannotIntegrate}\left[\frac{x}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Problem 116: Result valid but suboptimal antiderivative.

$$\int\frac{1}{(a\,g+b\,g\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(a\,g+b\,g\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Problem 117: Unable to integrate problem.

$$\int\frac{1}{(a\,g+b\,g\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}\,dx$$

Optimal (type 4, 103 leaves, 4 steps):

$$-\frac{e\,e^{A/B}\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{B}\right]}{B^2\,(b\,c-a\,d)\,g^2}-\frac{c+d\,x}{B\,(b\,c-a\,d)\,g^2\,(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Problem 118: Unable to integrate problem.

$$\int\frac{1}{(a\,g+b\,g\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}\,dx$$

Optimal (type 4, 212 leaves, 9 steps):

$$-\frac{2\,b\,e^2\,e^{\frac{2A}{B}}\,\text{ExpIntegralEi}\left[-\frac{2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{B}\right]}{B^2\,(b\,c-a\,d)^2\,g^3}+\frac{d\,e\,e^{A/B}\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{B}\right]}{B^2\,(b\,c-a\,d)^2\,g^3}+\frac{d\,(c+d\,x)}{B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}-\frac{b\,(c+d\,x)^2}{B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Problem 123: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 83 leaves, 5 steps):

$$-\frac{\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{b\,g}+\frac{2\,B\,\text{PolyLog}\left[2,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b\,g}$$

Result (type 4, 122 leaves, 10 steps):

$$-\frac{B\,\text{Log}[g\,(a+b\,x)]^2}{b\,g}+\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\text{Log}[a\,g+b\,g\,x]}{b\,g}+\frac{2\,B\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\text{Log}[a\,g+b\,g\,x]}{b\,g}+\frac{2\,B\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}$$

Problem 124: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 3, 65 leaves, 2 steps):

$$-\frac{2\,B}{b\,g^2\,(a+b\,x)}-\frac{(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}$$

Result (type 3, 105 leaves, 4 steps):

$$-\frac{2\,B}{b\,g^2\,(a+b\,x)}-\frac{2\,B\,d\,\text{Log}[a+b\,x]}{b\,(b\,c-a\,d)\,g^2}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]}{b\,g^2\,(a+b\,x)}+\frac{2\,B\,d\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)\,g^2}$$

Problem 128: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 dx$$

Optimal (type 4, 377 leaves, 8 steps):

$$-\frac{B (b c-a d) g^4 (a+b x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{5 b d}+\frac{g^4 (a+b x)^5 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{5 b}+$$
$$\frac{2 B (b c-a d)^2 g^4 (a+b x)^3 \left(2 A+B+2 B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{15 b d^2}-$$
$$\frac{B (b c-a d)^3 g^4 (a+b x)^2 \left(6 A+7 B+6 B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{15 b d^3}+$$
$$\frac{2 B (b c-a d)^4 g^4 (a+b x) \left(6 A+13 B+6 B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{15 b d^4}+$$
$$\frac{2 B (b c-a d)^5 g^4 \left(6 A+25 B+6 B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{15 b d^5}+$$
$$\frac{8 B^2 (b c-a d)^5 g^4 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{5 b d^5}$$

Result (type 4, 569 leaves, 28 steps):

$$\frac{4 A B (b c-a d)^4 g^4 x}{5 d^4}+\frac{26 B^2 (b c-a d)^4 g^4 x}{15 d^4}-\frac{7 B^2 (b c-a d)^3 g^4 (a+b x)^2}{15 b d^3}+$$
$$\frac{2 B^2 (b c-a d)^2 g^4 (a+b x)^3}{15 b d^2}+\frac{4 B^2 (b c-a d)^4 g^4 (a+b x) \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{5 b d^4}-$$
$$\frac{2 B (b c-a d)^3 g^4 (a+b x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{5 b d^3}+$$
$$\frac{4 B (b c-a d)^2 g^4 (a+b x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{15 b d^2}-$$
$$\frac{B (b c-a d) g^4 (a+b x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{5 b d}+\frac{g^4 (a+b x)^5 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{5 b}-$$
$$\frac{10 B^2 (b c-a d)^5 g^4 \operatorname{Log}[c+d x]}{3 b d^5}+\frac{8 B^2 (b c-a d)^5 g^4 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{5 b d^5}-$$
$$\frac{4 B (b c-a d)^5 g^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \operatorname{Log}[c+d x]}{5 b d^5}-$$
$$\frac{4 B^2 (b c-a d)^5 g^4 \operatorname{Log}[c+d x]^2}{5 b d^5}+\frac{8 B^2 (b c-a d)^5 g^4 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{5 b d^5}$$

Problem 129: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 \, dx$$

Optimal (type 4, 319 leaves, 7 steps):

$$-\frac{B (b c-a d) g^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d}+\frac{g^3 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 b}+$$
$$\frac{B (b c-a d)^2 g^3 (a+b x)^2 \left(3 A+2 B+3 B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{6 b d^2}-$$
$$\frac{B (b c-a d)^3 g^3 (a+b x) \left(3 A+5 B+3 B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d^3}-$$
$$\frac{B (b c-a d)^4 g^3 \left(3 A+11 B+3 B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{3 b d^4}-$$
$$\frac{2 B^2 (b c-a d)^4 g^3 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^4}$$

Result (type 4, 470 leaves, 24 steps):

$$-\frac{A B (b c-a d)^3 g^3 x}{d^3}-\frac{5 B^2 (b c-a d)^3 g^3 x}{3 d^3}+\frac{B^2 (b c-a d)^2 g^3 (a+b x)^2}{3 b d^2}-$$
$$\frac{B^2 (b c-a d)^3 g^3 (a+b x) \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{b d^3}+\frac{B (b c-a d)^2 g^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{2 b d^2}-$$
$$\frac{B (b c-a d) g^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d}+\frac{g^3 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 b}+$$
$$\frac{11 B^2 (b c-a d)^4 g^3 \text{Log}[c+d x]}{3 b d^4}-\frac{2 B^2 (b c-a d)^4 g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b d^4}+$$
$$\frac{B (b c-a d)^4 g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}[c+d x]}{b d^4}+$$
$$\frac{B^2 (b c-a d)^4 g^3 \text{Log}[c+d x]^2}{b d^4}-\frac{2 B^2 (b c-a d)^4 g^3 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b d^4}$$

Problem 130: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 \, dx$$

Optimal (type 4, 255 leaves, 6 steps):

$$-\frac{2\,B\,(b\,c-a\,d)\,g^2\,(a+b\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{3\,b\,d}+$$
$$\frac{g^2\,(a+b\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{3\,b}+\frac{4\,B\,(b\,c-a\,d)^2\,g^2\,(a+b\,x)\left(A+B+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{3\,b\,d^2}+$$
$$\frac{4\,B\,(b\,c-a\,d)^3\,g^2\left(A+3\,B+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{3\,b\,d^3}+\frac{8\,B^2\,(b\,c-a\,d)^3\,g^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{3\,b\,d^3}$$

Result (type 4, 397 leaves, 20 steps):

$$\frac{4\,A\,B\,(b\,c-a\,d)^2\,g^2\,x}{3\,d^2}+\frac{4\,B^2\,(b\,c-a\,d)^2\,g^2\,x}{3\,d^2}+\frac{4\,B^2\,(b\,c-a\,d)^2\,g^2\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]}{3\,b\,d^2}-$$
$$\frac{2\,B\,(b\,c-a\,d)\,g^2\,(a+b\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{3\,b\,d}+\frac{g^2\,(a+b\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{3\,b}-$$
$$\frac{4\,B^2\,(b\,c-a\,d)^3\,g^2\,\text{Log}[c+d\,x]}{b\,d^3}+\frac{8\,B^2\,(b\,c-a\,d)^3\,g^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\text{Log}[c+d\,x]}{3\,b\,d^3}-$$
$$\frac{4\,B\,(b\,c-a\,d)^3\,g^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\text{Log}[c+d\,x]}{3\,b\,d^3}-$$
$$\frac{4\,B^2\,(b\,c-a\,d)^3\,g^2\,\text{Log}[c+d\,x]^2}{3\,b\,d^3}+\frac{8\,B^2\,(b\,c-a\,d)^3\,g^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b\,d^3}$$

Problem 131: Result valid but suboptimal antiderivative.

$$\int(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2\,dx$$

Optimal (type 4, 188 leaves, 5 steps):

$$-\frac{2\,B\,(b\,c-a\,d)\,g\,(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{b\,d}+\frac{g\,(a+b\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{2\,b}-$$
$$\frac{2\,B\,(b\,c-a\,d)^2\,g\left(A+2\,B+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{b\,d^2}-\frac{4\,B^2\,(b\,c-a\,d)^2\,g\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,d^2}$$

Result (type 4, 291 leaves, 16 steps):

$$-\frac{2\,A\,B\,(b\,c-a\,d)\,g\,x}{d}-\frac{2\,B^2\,(b\,c-a\,d)\,g\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]}{b\,d}+$$
$$\frac{g\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{2\,b}+\frac{4\,B^2\,(b\,c-a\,d)^2\,g\,\text{Log}[c+d\,x]}{b\,d^2}-$$
$$\frac{4\,B^2\,(b\,c-a\,d)^2\,g\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{b\,d^2}+\frac{2\,B\,(b\,c-a\,d)^2\,g\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\text{Log}[c+d\,x]}{b\,d^2}+$$
$$\frac{2\,B^2\,(b\,c-a\,d)^2\,g\,\text{Log}[c+d\,x]^2}{b\,d^2}-\frac{4\,B^2\,(b\,c-a\,d)^2\,g\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,d^2}$$

Problem 132: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 132 leaves, 4 steps):

$$-\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+$$
$$\frac{4\,B\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+\frac{8\,B^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}$$

Result (type 4, 749 leaves, 46 steps):

$$-\frac{2\,A\,B\,\text{Log}\left[g\,(a+b\,x)\right]^2}{b\,g}+\frac{4\,B^2\,\text{Log}\left[g\,(a+b\,x)\right]^3}{3\,b\,g}-\frac{4\,B^2\,\text{Log}\left[g\,(a+b\,x)\right]^2\,\text{Log}[-c-d\,x]}{b\,g}+$$
$$\frac{4\,B^2\,\text{Log}\left[g\,(a+b\,x)\right]\,\text{Log}\left[(a+b\,x)^2\right]\,\text{Log}[-c-d\,x]}{b\,g}-\frac{B^2\,\text{Log}\left[(a+b\,x)^2\right]^2\,\text{Log}[-c-d\,x]}{b\,g}+$$
$$\frac{B^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[\frac{1}{(c+d\,x)^2}\right]^2}{b\,g}-\frac{B^2\,\text{Log}\left[g\,(a+b\,x)\right]\,\text{Log}\left[\frac{1}{(c+d\,x)^2}\right]^2}{b\,g}+$$
$$\frac{4\,B^2\,\text{Log}\left[g\,(a+b\,x)\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}+\frac{B^2\,\text{Log}\left[(a+b\,x)^2\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}+$$
$$\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2\,\text{Log}[a\,g+b\,g\,x]}{b\,g}+\frac{4\,A\,B\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]}{b\,g}-\frac{1}{b\,g}$$
$$4\,B^2\left(\text{Log}\left[(a+b\,x)^2\right]+\text{Log}\left[\frac{1}{(c+d\,x)^2}\right]-\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]-$$
$$\frac{2\,B^2\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b\,g}-\frac{4\,B^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b\,g}+$$
$$\frac{4\,A\,B\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}+\frac{4\,B^2\,\text{Log}\left[(a+b\,x)^2\right]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}-\frac{1}{b\,g}$$
$$4\,B^2\left(\text{Log}\left[(a+b\,x)^2\right]+\text{Log}\left[\frac{1}{(c+d\,x)^2}\right]-\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]-$$
$$\frac{4\,B^2\,\text{Log}\left[\frac{1}{(c+d\,x)^2}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}-\frac{8\,B^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}-\frac{8\,B^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}$$

Problem 133: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 3, 130 leaves, 3 steps):

$$-\frac{8\,B^2\,(c+d\,x)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{4\,B\,(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{(b\,c-a\,d)\,g^2\,(a+b\,x)}$$

Result (type 4, 480 leaves, 26 steps):

$$-\frac{8 B^2}{b g^2 (a+b x)}-\frac{8 B^2 d \operatorname{Log}[a+b x]}{b (b c-a d) g^2}+\frac{4 B^2 d \operatorname{Log}[a+b x]^2}{b (b c-a d) g^2}-\frac{4 B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b g^2 (a+b x)}-$$
$$\frac{4 B d \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b (b c-a d) g^2}-\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{b g^2 (a+b x)}+\frac{8 B^2 d \operatorname{Log}[c+d x]}{b (b c-a d) g^2}-$$
$$\frac{8 B^2 d \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{b (b c-a d) g^2}+\frac{4 B d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \operatorname{Log}[c+d x]}{b (b c-a d) g^2}+\frac{4 B^2 d \operatorname{Log}[c+d x]^2}{b (b c-a d) g^2}-$$
$$\frac{8 B^2 d \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d) g^2}-\frac{8 B^2 d \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b (b c-a d) g^2}-\frac{8 B^2 d \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d) g^2}$$

Problem 134: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{(a g+b g x)^3} \, dx$$

Optimal (type 3, 272 leaves, 7 steps):

$$\frac{8 B^2 d (c+d x)}{(b c-a d)^2 g^3 (a+b x)}-\frac{b B^2 (c+d x)^2}{(b c-a d)^2 g^3 (a+b x)^2}+$$
$$\frac{4 B d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{(b c-a d)^2 g^3 (a+b x)}-\frac{b B (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{(b c-a d)^2 g^3 (a+b x)^2}+$$
$$\frac{d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{(b c-a d)^2 g^3 (a+b x)}-\frac{b (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{2 (b c-a d)^2 g^3 (a+b x)^2}$$

Result (type 4, 579 leaves, 30 steps):

$$-\frac{B^2}{b g^3 (a+b x)^2}+\frac{6 B^2 d}{b (b c-a d) g^3 (a+b x)}+\frac{6 B^2 d^2 \operatorname{Log}[a+b x]}{b (b c-a d)^2 g^3}-$$
$$\frac{2 B^2 d^2 \operatorname{Log}[a+b x]^2}{b (b c-a d)^2 g^3}-\frac{B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b g^3 (a+b x)^2}+\frac{2 B d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b (b c-a d) g^3 (a+b x)}+$$
$$\frac{2 B d^2 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b (b c-a d)^2 g^3}-\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{2 b g^3 (a+b x)^2}-\frac{6 B^2 d^2 \operatorname{Log}[c+d x]}{b (b c-a d)^2 g^3}+$$
$$\frac{4 B^2 d^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{b (b c-a d)^2 g^3}-\frac{2 B d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \operatorname{Log}[c+d x]}{b (b c-a d)^2 g^3}-\frac{2 B^2 d^2 \operatorname{Log}[c+d x]^2}{b (b c-a d)^2 g^3}+$$
$$\frac{4 B^2 d^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^2 g^3}+\frac{4 B^2 d^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b (b c-a d)^2 g^3}+\frac{4 B^2 d^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^2 g^3}$$

Problem 135: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{(a g+b g x)^4} \, dx$$

Optimal (type 3, 429 leaves, 9 steps):

$$-\frac{8 B^2 d^2 (c+d x)}{(b c-a d)^3 g^4 (a+b x)}+\frac{2 b B^2 d (c+d x)^2}{(b c-a d)^3 g^4 (a+b x)^2}-\frac{8 b^2 B^2 (c+d x)^3}{27 (b c-a d)^3 g^4 (a+b x)^3}-\frac{4 B d^2 (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{(b c-a d)^3 g^4 (a+b x)}+\frac{2 b B d (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{(b c-a d)^3 g^4 (a+b x)^2}-\frac{4 b^2 B (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{9 (b c-a d)^3 g^4 (a+b x)^3}-\frac{d^2 (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{(b c-a d)^3 g^4 (a+b x)}+\frac{b d (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{(b c-a d)^3 g^4 (a+b x)^2}-\frac{b^2 (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{3 (b c-a d)^3 g^4 (a+b x)^3}$$

Result (type 4, 692 leaves, 34 steps):

$$-\frac{8 B^2}{27 b g^4 (a+b x)^3}+\frac{10 B^2 d}{9 b (b c-a d) g^4 (a+b x)^2}-\frac{44 B^2 d^2}{9 b (b c-a d)^2 g^4 (a+b x)}-\frac{44 B^2 d^3 \operatorname{Log}[a+b x]}{9 b (b c-a d)^3 g^4}+\frac{4 B^2 d^3 \operatorname{Log}[a+b x]^2}{3 b (b c-a d)^3 g^4}-\frac{4 B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{9 b g^4 (a+b x)^3}+\frac{2 B d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b (b c-a d) g^4 (a+b x)^2}-\frac{4 B d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b (b c-a d)^2 g^4 (a+b x)}-\frac{4 B d^3 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b (b c-a d)^3 g^4}-\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{3 b g^4 (a+b x)^3}+\frac{44 B^2 d^3 \operatorname{Log}[c+d x]}{9 b (b c-a d)^3 g^4}-\frac{8 B^2 d^3 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{3 b (b c-a d)^3 g^4}+\frac{4 B d^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \operatorname{Log}[c+d x]}{3 b (b c-a d)^3 g^4}+\frac{4 B^2 d^3 \operatorname{Log}[c+d x]^2}{3 b (b c-a d)^3 g^4}-\frac{8 B^2 d^3 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b (b c-a d)^3 g^4}-\frac{8 B^2 d^3 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 b (b c-a d)^3 g^4}-\frac{8 B^2 d^3 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 b (b c-a d)^3 g^4}$$

Problem 136: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{(a g+b g x)^5} \, dx$$

Optimal (type 3, 587 leaves, 11 steps):

$$\frac{8 B^2 d^3 (c+d x)}{(b c-a d)^4 g^5 (a+b x)}-\frac{3 b B^2 d^2 (c+d x)^2}{(b c-a d)^4 g^5 (a+b x)^2}+\frac{8 b^2 B^2 d (c+d x)^3}{9 (b c-a d)^4 g^5 (a+b x)^3}-\frac{b^3 B^2 (c+d x)^4}{8 (b c-a d)^4 g^5 (a+b x)^4}+\frac{4 B d^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{(b c-a d)^4 g^5 (a+b x)}-\frac{3 b B d^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{(b c-a d)^4 g^5 (a+b x)^2}+\frac{4 b^2 B d (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 (b c-a d)^4 g^5 (a+b x)^3}-\frac{b^3 B (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{4 (b c-a d)^4 g^5 (a+b x)^4}+\frac{d^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{(b c-a d)^4 g^5 (a+b x)}-\frac{3 b d^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{2 (b c-a d)^4 g^5 (a+b x)^2}+\frac{b^2 d (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{(b c-a d)^4 g^5 (a+b x)^3}-\frac{b^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 (b c-a d)^4 g^5 (a+b x)^4}$$

Result (type 4, 757 leaves, 38 steps):

$$-\frac{B^2}{8 b g^5 (a+b x)^4}+\frac{7 B^2 d}{18 b (b c-a d) g^5 (a+b x)^3}-\frac{13 B^2 d^2}{12 b (b c-a d)^2 g^5 (a+b x)^2}+\frac{25 B^2 d^3}{6 b (b c-a d)^3 g^5 (a+b x)}+\frac{25 B^2 d^4 \text{Log}[a+b x]}{6 b (b c-a d)^4 g^5}-\frac{B^2 d^4 \text{Log}[a+b x]^2}{b (b c-a d)^4 g^5}-\frac{B \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{4 b g^5 (a+b x)^4}+\frac{B d \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b (b c-a d) g^5 (a+b x)^3}-\frac{B d^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{2 b (b c-a d)^2 g^5 (a+b x)^2}+\frac{B d^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b (b c-a d)^3 g^5 (a+b x)}+\frac{B d^4 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b (b c-a d)^4 g^5}-\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 b g^5 (a+b x)^4}-\frac{25 B^2 d^4 \text{Log}[c+d x]}{6 b (b c-a d)^4 g^5}+\frac{2 B^2 d^4 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b (b c-a d)^4 g^5}-\frac{B d^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}[c+d x]}{b (b c-a d)^4 g^5}-\frac{B^2 d^4 \text{Log}[c+d x]^2}{b (b c-a d)^4 g^5}+\frac{2 B^2 d^4 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^4 g^5}+\frac{2 B^2 d^4 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b (b c-a d)^4 g^5}+\frac{2 B^2 d^4 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^4 g^5}$$

Problem 137: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2}{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]} \, dx$$

Optimal (type 8, 36 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(a\,g+b\,g\,x)^2}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]},\,x\right]$$

Result (type 8, 103 leaves, 2 steps):

$$a^2\,g^2\,\text{CannotIntegrate}\left[\frac{1}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]},\,x\right]+$$
$$2\,a\,b\,g^2\,\text{CannotIntegrate}\left[\frac{x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]},\,x\right]+b^2\,g^2\,\text{CannotIntegrate}\left[\frac{x^2}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]},\,x\right]$$

Problem 138: Result valid but suboptimal antiderivative.

$$\int\frac{a\,g+b\,g\,x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{a\,g+b\,g\,x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]},\,x\right]$$

Result (type 8, 59 leaves, 2 steps):

$$a\,g\,\text{CannotIntegrate}\left[\frac{1}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]},\,x\right]+b\,g\,\text{CannotIntegrate}\left[\frac{x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]},\,x\right]$$

Problem 139: Result valid but suboptimal antiderivative.

$$\int\frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}\,dx$$

Optimal (type 8, 36 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)},\,x\right]$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)},\,x\right]$$

Problem 140: Unable to integrate problem.

$$\int\frac{1}{(a\,g+b\,g\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}\,dx$$

Optimal (type 4, 91 leaves, 3 steps):

$$\frac{e^{\frac{A}{2B}}\sqrt{\frac{e(a+bx)^2}{(c+dx)^2}}\,(c+dx)\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]}{2B}\right]}{2B\,(bc-ad)\,g^2\,(a+bx)}$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(ag+bgx)^2\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)},x\right]$$

Problem 141: Unable to integrate problem.

$$\int\frac{1}{(ag+bgx)^3\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)}\,dx$$

Optimal (type 4, 149 leaves, 7 steps):

$$\frac{b\,e\,e^{A/B}\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]}{B}\right]}{2B\,(bc-ad)^2\,g^3}-\frac{d\,e^{\frac{A}{2B}}\sqrt{\frac{e(a+bx)^2}{(c+dx)^2}}\,(c+dx)\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]}{2B}\right]}{2B\,(bc-ad)^2\,g^3\,(a+bx)}$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(ag+bgx)^3\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)},x\right]$$

Problem 142: Result valid but suboptimal antiderivative.

$$\int\frac{(ag+bgx)^2}{\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)^2}\,dx$$

Optimal (type 8, 36 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(ag+bgx)^2}{\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)^2},x\right]$$

Result (type 8, 103 leaves, 2 steps):

$$a^2 g^2\,\text{CannotIntegrate}\left[\frac{1}{\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)^2},x\right]+$$
$$2abg^2\,\text{CannotIntegrate}\left[\frac{x}{\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)^2},x\right]+$$
$$b^2 g^2\,\text{CannotIntegrate}\left[\frac{x^2}{\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)^2},x\right]$$

Problem 143: Result valid but suboptimal antiderivative.

$$\int \frac{a g + b g x}{\left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2} \, dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{a g + b g x}{\left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}, x\right]$$

Result (type 8, 59 leaves, 2 steps):

$$a g \,\text{CannotIntegrate}\left[\frac{1}{\left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}, x\right] + b g \,\text{CannotIntegrate}\left[\frac{x}{\left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}, x\right]$$

Problem 144: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(a g + b g x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2} \, dx$$

Optimal (type 8, 36 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(a g + b g x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}, x\right]$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g + b g x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}, x\right]$$

Problem 145: Unable to integrate problem.

$$\int \frac{1}{(a g + b g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2} \, dx$$

Optimal (type 4, 147 leaves, 4 steps):

$$-\frac{e^{\frac{A}{2 B}} \sqrt{\frac{e (a+b x)^2}{(c+d x)^2}} (c + d x) \,\text{ExpIntegralEi}\left[-\frac{A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{2 B}\right]}{4 B^2 (b c - a d) g^2 (a + b x)} - \frac{c + d x}{2 B (b c - a d) g^2 (a + b x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2},x\right]$$

Problem 146: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2} \, dx$$

Optimal (type 4, 263 leaves, 9 steps):

$$-\frac{b e\, e^{A/B} \text{ExpIntegralEi}\left[-\frac{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{B}\right]}{2 B^2 (b c-a d)^2 g^3}+\frac{d\, e^{\frac{A}{2 B}} \sqrt{\frac{e (a+b x)^2}{(c+d x)^2}}\, (c+d x) \text{ExpIntegralEi}\left[-\frac{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{2 B}\right]}{4 B^2 (b c-a d)^2 g^3 (a+b x)}+\frac{d (c+d x)}{2 B (b c-a d)^2 g^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}-\frac{b (c+d x)^2}{2 B (b c-a d)^2 g^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g+b g x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2},x\right]$$

Problem 147: Result valid but suboptimal antiderivative.

$$\int (a+b x)^4 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \, dx$$

Optimal (type 3, 171 leaves, 3 steps):

$$\frac{B (b c-a d)^4 n x}{5 d^4}-\frac{B (b c-a d)^3 n (a+b x)^2}{10 b d^3}+\frac{B (b c-a d)^2 n (a+b x)^3}{15 b d^2}-\frac{B (b c-a d) n (a+b x)^4}{20 b d}-\frac{B (b c-a d)^5 n \text{Log}[c+d x]}{5 b d^5}+\frac{(a+b x)^5 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{5 b}$$

Result (type 3, 183 leaves, 5 steps):

$$\frac{B (b c-a d)^4 n x}{5 d^4}-\frac{B (b c-a d)^3 n (a+b x)^2}{10 b d^3}+\frac{B (b c-a d)^2 n (a+b x)^3}{15 b d^2}-\frac{B (b c-a d) n (a+b x)^4}{20 b d}+\frac{A (a+b x)^5}{5 b}-\frac{B (b c-a d)^5 n \text{Log}[c+d x]}{5 b d^5}+\frac{B (a+b x)^5 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{5 b}$$

Problem 148: Result valid but suboptimal antiderivative.

$$\int (a+b x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \, dx$$

Optimal (type 3, 142 leaves, 3 steps):

$$-\frac{B (b c-a d)^3 n x}{4 d^3}+\frac{B (b c-a d)^2 n (a+b x)^2}{8 b d^2}-\frac{B (b c-a d) n (a+b x)^3}{12 b d}+\frac{B (b c-a d)^4 n \text{Log}[c+d x]}{4 b d^4}+\frac{(a+b x)^4 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{4 b}$$

Result (type 3, 154 leaves, 5 steps):

$$-\frac{B (b c-a d)^3 n x}{4 d^3}+\frac{B (b c-a d)^2 n (a+b x)^2}{8 b d^2}-\frac{B (b c-a d) n (a+b x)^3}{12 b d}+\frac{A (a+b x)^4}{4 b}+\frac{B (b c-a d)^4 n \text{Log}[c+d x]}{4 b d^4}+\frac{B (a+b x)^4 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 b}$$

Problem 149: Result valid but suboptimal antiderivative.

$$\int (a+b x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \, dx$$

Optimal (type 3, 113 leaves, 3 steps):

$$\frac{B (b c-a d)^2 n x}{3 d^2}-\frac{B (b c-a d) n (a+b x)^2}{6 b d}-\frac{B (b c-a d)^3 n \text{Log}[c+d x]}{3 b d^3}+\frac{(a+b x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{3 b}$$

Result (type 3, 125 leaves, 5 steps):

$$\frac{B (b c-a d)^2 n x}{3 d^2}-\frac{B (b c-a d) n (a+b x)^2}{6 b d}+\frac{A (a+b x)^3}{3 b}-\frac{B (b c-a d)^3 n \text{Log}[c+d x]}{3 b d^3}+\frac{B (a+b x)^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b}$$

Problem 150: Result valid but suboptimal antiderivative.

$$\int (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \, dx$$

Optimal (type 3, 84 leaves, 3 steps):

$$-\frac{B (b c-a d) n x}{2 d}+\frac{B (b c-a d)^2 n \text{Log}[c+d x]}{2 b d^2}+\frac{(a+b x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{2 b}$$

Result (type 3, 96 leaves, 5 steps):

$$-\frac{B\,(b\,c-a\,d)\,n\,x}{2\,d}+\frac{A\,(a+b\,x)^2}{2\,b}+\frac{B\,(b\,c-a\,d)^2\,n\,\text{Log}[c+d\,x]}{2\,b\,d^2}+\frac{B\,(a+b\,x)^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{2\,b}$$

Problem 151: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{a+b\,x}\,dx$$

Optimal (type 4, 79 leaves, 5 steps):

$$-\frac{\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}{b}+\frac{B\,n\,\text{PolyLog}\left[2,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b}$$

Result (type 4, 87 leaves, 7 steps):

$$\frac{A\,\text{Log}[a+b\,x]}{b}-\frac{B\,\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{b}+\frac{B\,n\,\text{PolyLog}\left[2,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b}$$

Problem 152: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{(a+b\,x)^2}\,dx$$

Optimal (type 3, 97 leaves, 3 steps):

$$-\frac{B\,n}{b\,(a+b\,x)}-\frac{B\,d\,n\,\text{Log}[a+b\,x]}{b\,(b\,c-a\,d)}+\frac{B\,d\,n\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)}-\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{b\,(a+b\,x)}$$

Result (type 3, 72 leaves, 4 steps):

$$-\frac{A}{b\,(a+b\,x)}-\frac{B\,n}{b\,(a+b\,x)}-\frac{B\,(c+d\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{(b\,c-a\,d)\,(a+b\,x)}$$

Problem 153: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{(a+b\,x)^3}\,dx$$

Optimal (type 3, 137 leaves, 3 steps):

$$-\frac{B\,n}{4\,b\,(a+b\,x)^2}+\frac{B\,d\,n}{2\,b\,(b\,c-a\,d)\,(a+b\,x)}+\frac{B\,d^2\,n\,\text{Log}[a+b\,x]}{2\,b\,(b\,c-a\,d)^2}-\frac{B\,d^2\,n\,\text{Log}[c+d\,x]}{2\,b\,(b\,c-a\,d)^2}-\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{2\,b\,(a+b\,x)^2}$$

Result (type 3, 149 leaves, 5 steps):

$$-\frac{A}{2 b (a+b x)^2}-\frac{B n}{4 b (a+b x)^2}+\frac{B d n}{2 b (b c-a d) (a+b x)}+\frac{B d^2 n \operatorname{Log}[a+b x]}{2 b (b c-a d)^2}-\frac{B d^2 n \operatorname{Log}[c+d x]}{2 b (b c-a d)^2}-\frac{B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 b (a+b x)^2}$$

Problem 154: Result valid but suboptimal antiderivative.

$$\int \frac{A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{(a+b x)^4} \, dx$$

Optimal (type 3, 166 leaves, 3 steps):

$$-\frac{B n}{9 b (a+b x)^3}+\frac{B d n}{6 b (b c-a d) (a+b x)^2}-\frac{B d^2 n}{3 b (b c-a d)^2 (a+b x)}-\frac{B d^3 n \operatorname{Log}[a+b x]}{3 b (b c-a d)^3}+\frac{B d^3 n \operatorname{Log}[c+d x]}{3 b (b c-a d)^3}-\frac{A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b (a+b x)^3}$$

Result (type 3, 178 leaves, 5 steps):

$$-\frac{A}{3 b (a+b x)^3}-\frac{B n}{9 b (a+b x)^3}+\frac{B d n}{6 b (b c-a d) (a+b x)^2}-\frac{B d^2 n}{3 b (b c-a d)^2 (a+b x)}-\frac{B d^3 n \operatorname{Log}[a+b x]}{3 b (b c-a d)^3}+\frac{B d^3 n \operatorname{Log}[c+d x]}{3 b (b c-a d)^3}-\frac{B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b (a+b x)^3}$$

Problem 155: Result valid but suboptimal antiderivative.

$$\int \frac{A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{(a+b x)^5} \, dx$$

Optimal (type 3, 195 leaves, 3 steps):

$$-\frac{B n}{16 b (a+b x)^4}+\frac{B d n}{12 b (b c-a d) (a+b x)^3}-\frac{B d^2 n}{8 b (b c-a d)^2 (a+b x)^2}+\frac{B d^3 n}{4 b (b c-a d)^3 (a+b x)}+\frac{B d^4 n \operatorname{Log}[a+b x]}{4 b (b c-a d)^4}-\frac{B d^4 n \operatorname{Log}[c+d x]}{4 b (b c-a d)^4}-\frac{A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 b (a+b x)^4}$$

Result (type 3, 207 leaves, 5 steps):

$$-\frac{A}{4 b (a+b x)^4}-\frac{B n}{16 b (a+b x)^4}+\frac{B d n}{12 b (b c-a d) (a+b x)^3}-\frac{B d^2 n}{8 b (b c-a d)^2 (a+b x)^2}+\frac{B d^3 n}{4 b (b c-a d)^3 (a+b x)}+\frac{B d^4 n \operatorname{Log}[a+b x]}{4 b (b c-a d)^4}-\frac{B d^4 n \operatorname{Log}[c+d x]}{4 b (b c-a d)^4}-\frac{B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 b (a+b x)^4}$$

Problem 156: Result valid but suboptimal antiderivative.

$$\int (a+b x)^3 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 dx$$

Optimal (type 4, 322 leaves, 8 steps):

$$-\frac{B (b c-a d) n (a+b x)^3 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{6 b d}+\frac{(a+b x)^4 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{4 b}+\frac{B (b c-a d)^2 n (a+b x)^2 \left(3 A+B n+3 B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{12 b d^2}-\frac{B (b c-a d)^3 n (a+b x) \left(6 A+5 B n+6 B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{12 b d^3}-\frac{1}{12 b d^4} B (b c-a d)^4 n \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(6 A+11 B n+6 B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)-\frac{B^2 (b c-a d)^4 n^2 \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{2 b d^4}$$

Result (type 4, 542 leaves, 21 steps):

$$-\frac{A B (b c-a d)^3 n x}{2 d^3}-\frac{5 B^2 (b c-a d)^3 n^2 x}{12 d^3}+\frac{A B (b c-a d)^2 n (a+b x)^2}{4 b d^2}+\frac{B^2 (b c-a d)^2 n^2 (a+b x)^2}{12 b d^2}-\frac{A B (b c-a d) n (a+b x)^3}{6 b d}+\frac{A^2 (a+b x)^4}{4 b}+\frac{A B (b c-a d)^4 n \operatorname{Log}[c+d x]}{2 b d^4}+\frac{11 B^2 (b c-a d)^4 n^2 \operatorname{Log}[c+d x]}{12 b d^4}-\frac{B^2 (b c-a d)^3 n (a+b x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 b d^3}+\frac{B^2 (b c-a d)^2 n (a+b x)^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 b d^2}-\frac{B^2 (b c-a d) n (a+b x)^3 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{6 b d}+\frac{A B (a+b x)^4 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 b}-\frac{B^2 (b c-a d)^4 n \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 b d^4}+\frac{B^2 (a+b x)^4 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{4 b}-\frac{B^2 (b c-a d)^4 n^2 \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{2 b d^4}$$

Problem 157: Result valid but suboptimal antiderivative.

$$\int (a+b x)^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 dx$$

Optimal (type 4, 263 leaves, 7 steps):

$$-\frac{B (b c-a d) n (a+b x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{3 b d}+\frac{(a+b x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{3 b}+\frac{B (b c-a d)^2 n (a+b x) \left(2 A+B n+2 B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{3 b d^2}+\frac{1}{3 b d^3}B (b c-a d)^3 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(2 A+3 B n+2 B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)+\frac{2 B^2 (b c-a d)^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}$$

Result (type 4, 427 leaves, 18 steps):

$$\frac{2 A B (b c-a d)^2 n x}{3 d^2}+\frac{B^2 (b c-a d)^2 n^2 x}{3 d^2}-\frac{A B (b c-a d) n (a+b x)^2}{3 b d}+\frac{A^2 (a+b x)^3}{3 b}-\frac{2 A B (b c-a d)^3 n \text{Log}[c+d x]}{3 b d^3}-\frac{B^2 (b c-a d)^3 n^2 \text{Log}[c+d x]}{b d^3}+\frac{2 B^2 (b c-a d)^2 n (a+b x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b d^2}-\frac{B^2 (b c-a d) n (a+b x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b d}+\frac{2 A B (a+b x)^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b}+\frac{2 B^2 (b c-a d)^3 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b d^3}+\frac{B^2 (a+b x)^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{3 b}+\frac{2 B^2 (b c-a d)^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}$$

Problem 158: Result valid but suboptimal antiderivative.

$$\int (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 \, dx$$

Optimal (type 4, 195 leaves, 6 steps):

$$-\frac{B (b c-a d) n (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b d}+\frac{(a+b x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 b}-\frac{B (b c-a d)^2 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B n+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b d^2}-\frac{B^2 (b c-a d)^2 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}$$

Result (type 4, 308 leaves, 15 steps):

$$-\frac{A B (b c-a d) n x}{d}+\frac{A^2 (a+b x)^2}{2 b}+\frac{A B (b c-a d)^2 n \operatorname{Log}[c+d x]}{b d^2}+\frac{B^2 (b c-a d)^2 n^2 \operatorname{Log}[c+d x]}{b d^2}-\frac{B^2 (b c-a d) n (a+b x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d}+\frac{A B (a+b x)^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}-\frac{B^2 (b c-a d)^2 n \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d^2}+\frac{B^2 (a+b x)^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 b}-\frac{B^2 (b c-a d)^2 n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}$$

Problem 159: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{a+b x} \, dx$$

Optimal (type 4, 131 leaves, 5 steps):

$$-\frac{\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b}+\frac{2 B n \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b}+\frac{2 B^2 n^2 \operatorname{PolyLog}\left[3, \frac{b (c+d x)}{d (a+b x)}\right]}{b}$$

Result (type 4, 227 leaves, 10 steps):

$$\frac{A^2 \operatorname{Log}[a+b x]}{b}-\frac{2 A B \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}-\frac{B^2 \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b}+\frac{2 A B n \operatorname{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{b}+\frac{2 B^2 n \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \operatorname{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{b}+\frac{2 B^2 n^2 \operatorname{PolyLog}\left[3, 1+\frac{b c-a d}{d (a+b x)}\right]}{b}$$

Problem 160: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(a+b x)^2} \, dx$$

Optimal (type 3, 129 leaves, 4 steps):

$$-\frac{2 B^2 n^2 (c+d x)}{(b c-a d) (a+b x)}-\frac{2 B n (c+d x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{(b c-a d) (a+b x)}-\frac{(c+d x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(b c-a d) (a+b x)}$$

Result (type 3, 189 leaves, 7 steps):

$$-\frac{A^2}{b\,(a+b\,x)}-\frac{2\,A\,B\,n}{b\,(a+b\,x)}-\frac{2\,B^2\,n^2}{b\,(a+b\,x)}-\frac{2\,A\,B\,(c+d\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{(b\,c-a\,d)\,(a+b\,x)}-\frac{2\,B^2\,n\,(c+d\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{(b\,c-a\,d)\,(a+b\,x)}-\frac{B^2\,(c+d\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)\,(a+b\,x)}$$

Problem 161: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{(a+b\,x)^3}\,dx$$

Optimal (type 3, 274 leaves, 8 steps):

$$\frac{2\,B^2\,d\,n^2\,(c+d\,x)}{(b\,c-a\,d)^2\,(a+b\,x)}-\frac{b\,B^2\,n^2\,(c+d\,x)^2}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\frac{2\,B\,d\,n\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}{(b\,c-a\,d)^2\,(a+b\,x)}-\frac{b\,B\,n\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}{2\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\frac{d\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{(b\,c-a\,d)^2\,(a+b\,x)}-\frac{b\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{2\,(b\,c-a\,d)^2\,(a+b\,x)^2}$$

Result (type 3, 411 leaves, 12 steps):

$$-\frac{A^2}{2\,b\,(a+b\,x)^2}-\frac{A\,B\,n}{2\,b\,(a+b\,x)^2}+\frac{A\,B\,d\,n}{b\,(b\,c-a\,d)\,(a+b\,x)}+\frac{2\,B^2\,d\,n^2}{b\,(b\,c-a\,d)\,(a+b\,x)}-\frac{b\,B^2\,n^2\,(c+d\,x)^2}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\frac{A\,B\,d^2\,n\,\text{Log}[a+b\,x]}{b\,(b\,c-a\,d)^2}-\frac{A\,B\,d^2\,n\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)^2}-\frac{A\,B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{b\,(a+b\,x)^2}+\frac{2\,B^2\,d\,n\,(c+d\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{(b\,c-a\,d)^2\,(a+b\,x)}-\frac{b\,B^2\,n\,(c+d\,x)^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{2\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\frac{B^2\,d\,(c+d\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)^2\,(a+b\,x)}-\frac{b\,B^2\,(c+d\,x)^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{2\,(b\,c-a\,d)^2\,(a+b\,x)^2}$$

Problem 162: Result unnecessarily involves higher level functions.

$$\int\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{(a+b\,x)^4}\,dx$$

Optimal (type 3, 427 leaves, 10 steps):

$$-\frac{2 B^2 d^2 n^2 (c+d x)}{(b c-a d)^3 (a+b x)}+\frac{b B^2 d n^2 (c+d x)^2}{2 (b c-a d)^3 (a+b x)^2}-\frac{2 b^2 B^2 n^2 (c+d x)^3}{27 (b c-a d)^3 (a+b x)^3}-\frac{2 B d^2 n (c+d x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{(b c-a d)^3 (a+b x)}+\frac{b B d n (c+d x)^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{(b c-a d)^3 (a+b x)^2}-\frac{2 b^2 B n (c+d x)^3 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{9 (b c-a d)^3 (a+b x)^3}-\frac{d^2 (c+d x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(b c-a d)^3 (a+b x)}+\frac{b d (c+d x)^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(b c-a d)^3 (a+b x)^2}-\frac{b^2 (c+d x)^3 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{3 (b c-a d)^3 (a+b x)^3}$$

Result (type 4, 730 leaves, 26 steps):

$$-\frac{A^2}{3 b (a+b x)^3}-\frac{2 A B n}{9 b (a+b x)^3}-\frac{2 B^2 n^2}{27 b (a+b x)^3}+\frac{A B d n}{3 b (b c-a d) (a+b x)^2}+\frac{5 B^2 d n^2}{18 b (b c-a d) (a+b x)^2}-\frac{2 A B d^2 n}{3 b (b c-a d)^2 (a+b x)}-\frac{11 B^2 d^2 n^2}{9 b (b c-a d)^2 (a+b x)}-\frac{2 A B d^3 n \operatorname{Log}[a+b x]}{3 b (b c-a d)^3}-\frac{5 B^2 d^3 n^2 \operatorname{Log}[a+b x]}{9 b (b c-a d)^3}+\frac{2 A B d^3 n \operatorname{Log}[c+d x]}{3 b (b c-a d)^3}+\frac{5 B^2 d^3 n^2 \operatorname{Log}[c+d x]}{9 b (b c-a d)^3}-\frac{2 A B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b (a+b x)^3}-\frac{2 B^2 n \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{9 b (a+b x)^3}+\frac{B^2 d n \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b (b c-a d) (a+b x)^2}-\frac{2 B^2 d^2 n (c+d x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 (b c-a d)^3 (a+b x)}+\frac{2 B^2 d^3 n \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b (b c-a d)^3}-\frac{2 B^2 d^3 n \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b (b c-a d)^3}-\frac{B^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{3 b (a+b x)^3}-\frac{2 B^2 d^3 n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{3 b (b c-a d)^3}-\frac{2 B^2 d^3 n^2 \operatorname{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{3 b (b c-a d)^3}$$

Problem 163: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{(a+b\,x)^5}\,dx$$

Optimal (type 3, 587 leaves, 12 steps):

$$\frac{2\,B^2\,d^3\,n^2\,(c+d\,x)}{(b\,c-a\,d)^4\,(a+b\,x)}-\frac{3\,b\,B^2\,d^2\,n^2\,(c+d\,x)^2}{4\,(b\,c-a\,d)^4\,(a+b\,x)^2}+\frac{2\,b^2\,B^2\,d\,n^2\,(c+d\,x)^3}{9\,(b\,c-a\,d)^4\,(a+b\,x)^3}-\frac{b^3\,B^2\,n^2\,(c+d\,x)^4}{32\,(b\,c-a\,d)^4\,(a+b\,x)^4}+\frac{2\,B\,d^3\,n\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}{(b\,c-a\,d)^4\,(a+b\,x)}-\frac{3\,b\,B\,d^2\,n\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}{2\,(b\,c-a\,d)^4\,(a+b\,x)^2}+\frac{2\,b^2\,B\,d\,n\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}{3\,(b\,c-a\,d)^4\,(a+b\,x)^3}-\frac{b^3\,B\,n\,(c+d\,x)^4\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}{8\,(b\,c-a\,d)^4\,(a+b\,x)^4}+\frac{d^3\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{(b\,c-a\,d)^4\,(a+b\,x)}-\frac{3\,b\,d^2\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{2\,(b\,c-a\,d)^4\,(a+b\,x)^2}+\frac{b^2\,d\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{(b\,c-a\,d)^4\,(a+b\,x)^3}-\frac{b^3\,(c+d\,x)^4\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{4\,(b\,c-a\,d)^4\,(a+b\,x)^4}$$

Result (type 4, 843 leaves, 29 steps):

$$-\frac{A^2}{4 b (a+b x)^4}-\frac{A B n}{8 b (a+b x)^4}-\frac{B^2 n^2}{32 b (a+b x)^4}+\frac{A B d n}{6 b (b c-a d) (a+b x)^3}+\frac{7 B^2 d n^2}{72 b (b c-a d) (a+b x)^3}-$$
$$\frac{A B d^2 n}{4 b (b c-a d)^2 (a+b x)^2}-\frac{13 B^2 d^2 n^2}{48 b (b c-a d)^2 (a+b x)^2}+\frac{A B d^3 n}{2 b (b c-a d)^3 (a+b x)}+$$
$$\frac{25 B^2 d^3 n^2}{24 b (b c-a d)^3 (a+b x)}+\frac{A B d^4 n \text{Log}[a+b x]}{2 b (b c-a d)^4}+\frac{13 B^2 d^4 n^2 \text{Log}[a+b x]}{24 b (b c-a d)^4}-\frac{A B d^4 n \text{Log}[c+d x]}{2 b (b c-a d)^4}-$$
$$\frac{13 B^2 d^4 n^2 \text{Log}[c+d x]}{24 b (b c-a d)^4}-\frac{A B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 b (a+b x)^4}-\frac{B^2 n \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{8 b (a+b x)^4}+$$
$$\frac{B^2 d n \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{6 b (b c-a d) (a+b x)^3}-\frac{B^2 d^2 n \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 b (b c-a d)^2 (a+b x)^2}+$$
$$\frac{B^2 d^3 n (c+d x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 (b c-a d)^4 (a+b x)}-\frac{B^2 d^4 n \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 b (b c-a d)^4}+$$
$$\frac{B^2 d^4 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 b (b c-a d)^4}-\frac{B^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{4 b (a+b x)^4}+$$
$$\frac{B^2 d^4 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{2 b (b c-a d)^4}+\frac{B^2 d^4 n^2 \text{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{2 b (b c-a d)^4}$$

Problem 164: Result valid but suboptimal antiderivative.

$$\int (a+b x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3 \, dx$$

Optimal (type 4, 809 leaves, 27 steps):

$$-\frac{B^3 (b c-a d)^3 n^3 x}{4 d^3}-\frac{B^3 (b c-a d)^4 n^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{4 b d^4}+\frac{3 B^3 (b c-a d)^4 n^3 \text{Log}[c+d x]}{2 b d^4}-$$
$$\frac{7 B^2 (b c-a d)^3 n^2 (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{4 b d^3}+$$
$$\frac{b B^2 (b c-a d)^2 n^2 (c+d x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{4 d^4}-$$
$$\frac{9 B^2 (b c-a d)^4 n^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{2 b d^4}-$$
$$\frac{9 B (b c-a d)^3 n (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{4 b d^3}+$$
$$\frac{9 b B (b c-a d)^2 n (c+d x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{8 d^4}-$$
$$\frac{b^2 B (b c-a d) n (c+d x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{4 d^4}-$$
$$\frac{3 B (b c-a d)^4 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{4 b d^4}+$$
$$\frac{(a+b x)^4 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{4 b}+\frac{1}{4 b d^4}$$
$$7 B^2 (b c-a d)^4 n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]-$$
$$\frac{9 B^3 (b c-a d)^4 n^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{2 b d^4}-\frac{1}{2 b d^4}$$
$$3 B^2 (b c-a d)^4 n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]-$$
$$\frac{7 B^3 (b c-a d)^4 n^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{4 b d^4}+\frac{3 B^3 (b c-a d)^4 n^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{2 b d^4}$$

Result (type 4, 1203 leaves, 56 steps):

$$-\frac{3 A^2 B (b c-a d)^3 n x}{4 d^3}-\frac{5 A B^2 (b c-a d)^3 n^2 x}{4 d^3}-\frac{B^3 (b c-a d)^3 n^3 x}{4 d^3}+$$
$$\frac{3 A^2 B (b c-a d)^2 n (a+b x)^2}{8 b d^2}+\frac{A B^2 (b c-a d)^2 n^2 (a+b x)^2}{4 b d^2}-\frac{A^2 B (b c-a d) n (a+b x)^3}{4 b d}+$$
$$\frac{A^3 (a+b x)^4}{4 b}+\frac{3 A^2 B (b c-a d)^4 n \text{Log}[c+d x]}{4 b d^4}+\frac{11 A B^2 (b c-a d)^4 n^2 \text{Log}[c+d x]}{4 b d^4}+$$
$$\frac{3 B^3 (b c-a d)^4 n^3 \text{Log}[c+d x]}{2 b d^4}-\frac{3 A B^2 (b c-a d)^3 n (a+b x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 b d^3}-$$
$$\frac{5 B^3 (b c-a d)^3 n^2 (a+b x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 b d^3}+$$

$$\frac{3 A B^2 (b c-a d)^2 n (a+b x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 b d^2}+$$
$$\frac{B^3 (b c-a d)^2 n^2 (a+b x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 b d^2}-$$
$$\frac{A B^2 (b c-a d) n (a+b x)^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 b d}+$$
$$\frac{3 A^2 B (a+b x)^4 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 b}-$$
$$\frac{3 A B^2 (b c-a d)^4 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 b d^4}-$$
$$\frac{11 B^3 (b c-a d)^4 n^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 b d^4}-$$
$$\frac{3 B^3 (b c-a d)^3 n (a+b x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{4 b d^3}+$$
$$\frac{3 B^3 (b c-a d)^2 n (a+b x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{8 b d^2}-$$
$$\frac{B^3 (b c-a d) n (a+b x)^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{4 b d}+$$
$$\frac{3 A B^2 (a+b x)^4 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{4 b}-$$
$$\frac{3 B^3 (b c-a d)^4 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{4 b d^4}+$$
$$\frac{B^3 (a+b x)^4 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3}{4 b}-\frac{3 A B^2 (b c-a d)^4 n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{2 b d^4}-$$
$$\frac{11 B^3 (b c-a d)^4 n^3 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{4 b d^4}-\frac{1}{2 b d^4}$$
$$3 B^3 (b c-a d)^4 n^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \text{PolyLog}\left[2, 1-\frac{b c-a d}{b (c+d x)}\right]+$$
$$\frac{3 B^3 (b c-a d)^4 n^3 \text{PolyLog}\left[3, 1-\frac{b c-a d}{b (c+d x)}\right]}{2 b d^4}$$

Problem 165: Result valid but suboptimal antiderivative.

$$\int (a+b x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3 dx$$

Optimal (type 4, 614 leaves, 17 steps):

$$-\frac{B^3 (b c-a d)^3 n^3 \operatorname{Log}[c+d x]}{b d^3}+\frac{B^2 (b c-a d)^2 n^2 (a+b x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b d^2}+$$
$$\frac{4 B^2 (b c-a d)^3 n^2 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b d^3}+$$
$$\frac{2 B (b c-a d)^2 n (a+b x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{b d^2}-$$
$$\frac{b B (b c-a d) n (c+d x)^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 d^3}+$$
$$\frac{B (b c-a d)^3 n \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{b d^3}+$$
$$\frac{(a+b x)^3 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{3 b}-$$
$$\frac{B^2 (b c-a d)^3 n^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b d^3}+$$
$$\frac{4 B^3 (b c-a d)^3 n^3 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^3}+\frac{1}{b d^3}$$
$$2 B^2 (b c-a d)^3 n^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]+$$
$$\frac{B^3 (b c-a d)^3 n^3 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b d^3}-\frac{2 B^3 (b c-a d)^3 n^3 \operatorname{PolyLog}\left[3, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^3}$$

Result (type 4, 915 leaves, 40 steps):

$$\frac{A^2 B (b c-a d)^2 n x}{d^2}+\frac{A B^2 (b c-a d)^2 n^2 x}{d^2}-\frac{A^2 B (b c-a d) n (a+b x)^2}{2 b d}+\frac{A^3 (a+b x)^3}{3 b}-\frac{A^2 B (b c-a d)^3 n \operatorname{Log}[c+d x]}{b d^3}-\frac{3 A B^2 (b c-a d)^3 n^2 \operatorname{Log}[c+d x]}{b d^3}-\frac{B^3 (b c-a d)^3 n^3 \operatorname{Log}[c+d x]}{b d^3}+\frac{2 A B^2 (b c-a d)^2 n (a+b x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d^2}+\frac{B^3 (b c-a d)^2 n^2 (a+b x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d^2}-\frac{A B^2 (b c-a d) n (a+b x)^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d}+\frac{A^2 B (a+b x)^3 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}+\frac{2 A B^2 (b c-a d)^3 n \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d^3}+\frac{3 B^3 (b c-a d)^3 n^2 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d^3}+\frac{B^3 (b c-a d)^2 n (a+b x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b d^2}-\frac{B^3 (b c-a d) n (a+b x)^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 b d}+\frac{A B^2 (a+b x)^3 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b}+\frac{B^3 (b c-a d)^3 n \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b d^3}+\frac{B^3 (a+b x)^3 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3}{3 b}+\frac{2 A B^2 (b c-a d)^3 n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^3}+\frac{3 B^3 (b c-a d)^3 n^3 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^3}+\frac{1}{b d^3} 2 B^3 (b c-a d)^3 n^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \operatorname{PolyLog}\left[2, 1-\frac{b c-a d}{b (c+d x)}\right]-\frac{2 B^3 (b c-a d)^3 n^3 \operatorname{PolyLog}\left[3, 1-\frac{b c-a d}{b (c+d x)}\right]}{b d^3}$$

Problem 166: Result valid but suboptimal antiderivative.

$$\int (a+b x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3 \, dx$$

Optimal (type 4, 376 leaves, 11 steps):

$$-\frac{3 B^2 (b c-a d)^2 n^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b d^2}-$$

$$\frac{3 B (b c-a d) n (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 b d}-$$

$$\frac{3 B (b c-a d)^2 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 b d^2}+$$

$$\frac{(a+b x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{2 b}-\frac{3 B^3 (b c-a d)^2 n^3 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}-$$

$$\frac{1}{b d^2} 3 B^2 (b c-a d)^2 n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]+$$

$$\frac{3 B^3 (b c-a d)^2 n^3 \text{PolyLog}\left[3, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}$$

Result (type 4, 700 leaves, 27 steps) :

$$-\frac{3A^2B(bc-ad)nx}{2d}+\frac{A^3(a+bx)^2}{2b}+\frac{3A^2B(bc-ad)^2n\,\text{Log}[c+dx]}{2bd^2}+$$
$$\frac{3AB^2(bc-ad)^2n^2\,\text{Log}[c+dx]}{bd^2}-\frac{3AB^2(bc-ad)n(a+bx)\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]}{bd}+$$
$$\frac{3A^2B(a+bx)^2\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]}{2b}-$$
$$\frac{3AB^2(bc-ad)^2n\,\text{Log}\left[\frac{bc-ad}{b(c+dx)}\right]\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]}{bd^2}-$$
$$\frac{3B^3(bc-ad)^2n^2\,\text{Log}\left[\frac{bc-ad}{b(c+dx)}\right]\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]}{bd^2}-$$
$$\frac{3B^3(bc-ad)n(a+bx)\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]^2}{2bd}+$$
$$\frac{3AB^2(a+bx)^2\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]^2}{2b}-$$
$$\frac{3B^3(bc-ad)^2n\,\text{Log}\left[\frac{bc-ad}{b(c+dx)}\right]\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]^2}{2bd^2}+$$
$$\frac{B^3(a+bx)^2\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]^3}{2b}-\frac{3AB^2(bc-ad)^2n^2\,\text{PolyLog}\left[2,\frac{d(a+bx)}{b(c+dx)}\right]}{bd^2}-$$
$$\frac{3B^3(bc-ad)^2n^3\,\text{PolyLog}\left[2,\frac{d(a+bx)}{b(c+dx)}\right]}{bd^2}-\frac{1}{bd^2}$$
$$3B^3(bc-ad)^2n^2\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\text{PolyLog}\left[2,1-\frac{bc-ad}{b(c+dx)}\right]+$$
$$\frac{3B^3(bc-ad)^2n^3\,\text{PolyLog}\left[3,1-\frac{bc-ad}{b(c+dx)}\right]}{bd^2}$$

Problem 167: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)^3}{a+bx}\,dx$$

Optimal (type 4, 186 leaves, 6 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)^3\text{Log}\left[1-\frac{b(c+dx)}{d(a+bx)}\right]}{b}+$$
$$\frac{3Bn\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)^2\text{PolyLog}\left[2,\frac{b(c+dx)}{d(a+bx)}\right]}{b}+$$
$$\frac{6B^2n^2\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)\text{PolyLog}\left[3,\frac{b(c+dx)}{d(a+bx)}\right]}{b}+\frac{6B^3n^3\,\text{PolyLog}\left[4,\frac{b(c+dx)}{d(a+bx)}\right]}{b}$$

Result (type 4, 424 leaves, 14 steps):

$$\frac{A^3 \operatorname{Log}[a+b x]}{b}-\frac{3 A^2 B \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}-$$
$$\frac{3 A B^2 \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b}-\frac{B^3 \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3}{b}+$$
$$\frac{3 A^2 B n \operatorname{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{b}+\frac{6 A B^2 n \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \operatorname{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{b}+$$
$$\frac{3 B^3 n \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2 \operatorname{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{b}+\frac{6 A B^2 n^2 \operatorname{PolyLog}\left[3, 1+\frac{b c-a d}{d (a+b x)}\right]}{b}+$$
$$\frac{6 B^3 n^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \operatorname{PolyLog}\left[3, 1+\frac{b c-a d}{d (a+b x)}\right]}{b}+\frac{6 B^3 n^3 \operatorname{PolyLog}\left[4, 1+\frac{b c-a d}{d (a+b x)}\right]}{b}$$

Problem 168: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(a+b x)^2} \, dx$$

Optimal (type 3, 184 leaves, 5 steps):

$$-\frac{6 B^3 n^3 (c+d x)}{(b c-a d) (a+b x)}-\frac{6 B^2 n^2 (c+d x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{(b c-a d) (a+b x)}-$$
$$\frac{3 B n (c+d x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(b c-a d) (a+b x)}-\frac{(c+d x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(b c-a d) (a+b x)}$$

Result (type 3, 360 leaves, 11 steps):

$$-\frac{A^3}{b (a+b x)}-\frac{3 A^2 B n}{b (a+b x)}-\frac{6 A B^2 n^2}{b (a+b x)}-\frac{6 B^3 n^3}{b (a+b x)}-$$
$$\frac{3 A^2 B (c+d x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{(b c-a d) (a+b x)}-\frac{6 A B^2 n (c+d x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{(b c-a d) (a+b x)}-$$
$$\frac{6 B^3 n^2 (c+d x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{(b c-a d) (a+b x)}-\frac{3 A B^2 (c+d x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{(b c-a d) (a+b x)}-$$
$$\frac{3 B^3 n (c+d x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{(b c-a d) (a+b x)}-\frac{B^3 (c+d x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3}{(b c-a d) (a+b x)}$$

Problem 169: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(a+b x)^3} \, dx$$

Optimal (type 3, 390 leaves, 10 steps):

$$\frac{6 B^3 d n^3 (c+d x)}{(b c-a d)^2 (a+b x)}-\frac{3 b B^3 n^3 (c+d x)^2}{8 (b c-a d)^2 (a+b x)^2}+\frac{6 B^2 d n^2 (c+d x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{(b c-a d)^2 (a+b x)}-\frac{3 b B^2 n^2 (c+d x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{4 (b c-a d)^2 (a+b x)^2}+\frac{3 B d n (c+d x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(b c-a d)^2 (a+b x)}-\frac{3 b B n (c+d x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{4 (b c-a d)^2 (a+b x)^2}+\frac{d (c+d x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(b c-a d)^2 (a+b x)}-\frac{b (c+d x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{2 (b c-a d)^2 (a+b x)^2}$$

Result (type 3, 811 leaves, 21 steps):

$$-\frac{A^3}{2 b (a+b x)^2}-\frac{3 A^2 B n}{4 b (a+b x)^2}+\frac{3 A^2 B d n}{2 b (b c-a d) (a+b x)}+\frac{6 A B^2 d n^2}{b (b c-a d) (a+b x)}+\frac{6 B^3 d n^3}{b (b c-a d) (a+b x)}-\frac{3 A b B^2 n^2 (c+d x)^2}{4 (b c-a d)^2 (a+b x)^2}-\frac{3 b B^3 n^3 (c+d x)^2}{8 (b c-a d)^2 (a+b x)^2}+\frac{3 A^2 B d^2 n \text{Log}[a+b x]}{2 b (b c-a d)^2}-\frac{3 A^2 B d^2 n \text{Log}[c+d x]}{2 b (b c-a d)^2}-\frac{3 A^2 B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 b (a+b x)^2}+\frac{6 A B^2 d n (c+d x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{(b c-a d)^2 (a+b x)}+\frac{6 B^3 d n^2 (c+d x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{(b c-a d)^2 (a+b x)}-\frac{3 A b B^2 n (c+d x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 (b c-a d)^2 (a+b x)^2}-\frac{3 b B^3 n^2 (c+d x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 (b c-a d)^2 (a+b x)^2}+\frac{3 A B^2 d (c+d x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{(b c-a d)^2 (a+b x)}+\frac{3 B^3 d n (c+d x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{(b c-a d)^2 (a+b x)}-\frac{3 A b B^2 (c+d x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 (b c-a d)^2 (a+b x)^2}-\frac{3 b B^3 n (c+d x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{4 (b c-a d)^2 (a+b x)^2}+\frac{B^3 d (c+d x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3}{(b c-a d)^2 (a+b x)}-\frac{b B^3 (c+d x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3}{2 (b c-a d)^2 (a+b x)^2}$$

Problem 170: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(a+b x)^4} \, dx$$

Optimal (type 3, 611 leaves, 13 steps) :

$$-\frac{6 B^3 d^2 n^3 (c+d x)}{(b c-a d)^3 (a+b x)}+\frac{3 b B^3 d n^3 (c+d x)^2}{4 (b c-a d)^3 (a+b x)^2}-\frac{2 b^2 B^3 n^3 (c+d x)^3}{27 (b c-a d)^3 (a+b x)^3}-\frac{6 B^2 d^2 n^2 (c+d x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{(b c-a d)^3 (a+b x)}+\frac{3 b B^2 d n^2 (c+d x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{2 (b c-a d)^3 (a+b x)^2}-\frac{2 b^2 B^2 n^2 (c+d x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{9 (b c-a d)^3 (a+b x)^3}-\frac{3 B d^2 n (c+d x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(b c-a d)^3 (a+b x)}+\frac{3 b B d n (c+d x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 (b c-a d)^3 (a+b x)^2}-\frac{b^2 B n (c+d x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{3 (b c-a d)^3 (a+b x)^3}-\frac{d^2 (c+d x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(b c-a d)^3 (a+b x)}+\frac{b d (c+d x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(b c-a d)^3 (a+b x)^2}-\frac{b^2 (c+d x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{3 (b c-a d)^3 (a+b x)^3}$$

Result (type 4, 1876 leaves, 66 steps) :

$$-\frac{A^3}{3 b (a+b x)^3}-\frac{A^2 B n}{3 b (a+b x)^3}-\frac{2 A B^2 n^2}{9 b (a+b x)^3}-\frac{2 B^3 n^3}{27 b (a+b x)^3}+\frac{A^2 B d n}{2 b (b c-a d) (a+b x)^2}+\frac{5 A B^2 d n^2}{6 b (b c-a d) (a+b x)^2}+\frac{5 B^3 d n^3}{18 b (b c-a d) (a+b x)^2}-\frac{A^2 B d^2 n}{b (b c-a d)^2 (a+b x)}-\frac{11 A B^2 d^2 n^2}{3 b (b c-a d)^2 (a+b x)}-\frac{47 B^3 d^2 n^3}{9 b (b c-a d)^2 (a+b x)}+\frac{b B^3 d n^3 (c+d x)^2}{4 (b c-a d)^3 (a+b x)^2}-\frac{A^2 B d^3 n \text{Log}[a+b x]}{b (b c-a d)^3}-\frac{5 A B^2 d^3 n^2 \text{Log}[a+b x]}{3 b (b c-a d)^3}-\frac{5 B^3 d^3 n^3 \text{Log}[a+b x]}{9 b (b c-a d)^3}+\frac{A^2 B d^3 n \text{Log}[c+d x]}{b (b c-a d)^3}+\frac{5 A B^2 d^3 n^2 \text{Log}[c+d x]}{3 b (b c-a d)^3}+\frac{5 B^3 d^3 n^3 \text{Log}[c+d x]}{9 b (b c-a d)^3}-\frac{A^2 B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b (a+b x)^3}-\frac{2 A B^2 n \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b (a+b x)^3}-\frac{2 B^3 n^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{9 b (a+b x)^3}+\frac{A B^2 d n \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b (b c-a d) (a+b x)^2}+$$

$$\frac{B^3 d n^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b (b c-a d) (a+b x)^2}-\frac{2 A B^2 d^2 n (c+d x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{(b c-a d)^3 (a+b x)}-$$

$$\frac{14 B^3 d^2 n^2 (c+d x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 (b c-a d)^3 (a+b x)}+\frac{b B^3 d n^2 (c+d x)^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 (b c-a d)^3 (a+b x)^2}+$$

$$\frac{2 A B^2 d^3 n \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b (b c-a d)^3}+$$

$$\frac{2 B^3 d^3 n^2 \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b (b c-a d)^3}-$$

$$\frac{2 A B^2 d^3 n \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b (b c-a d)^3}-$$

$$\frac{2 B^3 d^3 n^2 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{3 b (b c-a d)^3}-$$

$$\frac{A B^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b (a+b x)^3}-\frac{B^3 n \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{3 b (a+b x)^3}-$$

$$\frac{2 B^3 d^2 n (c+d x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{(b c-a d)^3 (a+b x)}+\frac{b B^3 d n (c+d x)^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 (b c-a d)^3 (a+b x)^2}+$$

$$\frac{B^3 d^3 n \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b (b c-a d)^3}-$$

$$\frac{B^3 d^3 n \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b (b c-a d)^3}-\frac{B^3 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3}{3 b (a+b x)^3}-$$

$$\frac{2 A B^2 d^3 n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b (b c-a d)^3}-\frac{2 B^3 d^3 n^3 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{3 b (b c-a d)^3}-$$

$$\frac{2 A B^2 d^3 n^2 \operatorname{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{b (b c-a d)^3}-\frac{2 B^3 d^3 n^3 \operatorname{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{3 b (b c-a d)^3}-$$

$$\frac{2 B^3 d^3 n^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \operatorname{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{b (b c-a d)^3}-$$

$$\frac{2 B^3 d^3 n^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \operatorname{PolyLog}\left[2, 1-\frac{b c-a d}{b (c+d x)}\right]}{b (b c-a d)^3}-$$

$$\frac{2 B^3 d^3 n^3 \operatorname{PolyLog}\left[3, 1+\frac{b c-a d}{d (a+b x)}\right]}{b (b c-a d)^3}+\frac{2 B^3 d^3 n^3 \operatorname{PolyLog}\left[3, 1-\frac{b c-a d}{b (c+d x)}\right]}{b (b c-a d)^3}$$

Problem 171: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(a+b x)^5} \, dx$$

Optimal (type 3, 830 leaves, 16 steps):

$$\frac{6 B^3 d^3 n^3 (c+d x)}{(b c-a d)^4 (a+b x)}-\frac{9 b B^3 d^2 n^3 (c+d x)^2}{8 (b c-a d)^4 (a+b x)^2}+\frac{2 b^2 B^3 d n^3 (c+d x)^3}{9 (b c-a d)^4 (a+b x)^3}-\frac{3 b^3 B^3 n^3 (c+d x)^4}{128 (b c-a d)^4 (a+b x)^4}+\frac{6 B^2 d^3 n^2 (c+d x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{(b c-a d)^4 (a+b x)}-\frac{9 b B^2 d^2 n^2 (c+d x)^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{4 (b c-a d)^4 (a+b x)^2}+\frac{2 b^2 B^2 d n^2 (c+d x)^3 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{3 (b c-a d)^4 (a+b x)^3}-\frac{3 b^3 B^2 n^2 (c+d x)^4 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{32 (b c-a d)^4 (a+b x)^4}+\frac{3 B d^3 n (c+d x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(b c-a d)^4 (a+b x)}-\frac{9 b B d^2 n (c+d x)^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{4 (b c-a d)^4 (a+b x)^2}+\frac{b^2 B d n (c+d x)^3 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(b c-a d)^4 (a+b x)^3}-\frac{3 b^3 B n (c+d x)^4 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{16 (b c-a d)^4 (a+b x)^4}+\frac{d^3 (c+d x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(b c-a d)^4 (a+b x)}-\frac{3 b d^2 (c+d x)^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{2 (b c-a d)^4 (a+b x)^2}+\frac{b^2 d (c+d x)^3 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(b c-a d)^4 (a+b x)^3}-\frac{b^3 (c+d x)^4 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{4 (b c-a d)^4 (a+b x)^4}$$

Result (type 4, 2173 leaves, 93 steps):

$$-\frac{A^3}{4 b (a+b x)^4}-\frac{3 A^2 B n}{16 b (a+b x)^4}-\frac{3 A B^2 n^2}{32 b (a+b x)^4}-\frac{3 B^3 n^3}{128 b (a+b x)^4}+\frac{A^2 B d n}{4 b (b c-a d) (a+b x)^3}+$$

$$\frac{7\,A\,B^2\,d\,n^2}{24\,b\,(b\,c-a\,d)\,(a+b\,x)^3}+\frac{37\,B^3\,d\,n^3}{288\,b\,(b\,c-a\,d)\,(a+b\,x)^3}-\frac{3\,A^2\,B\,d^2\,n}{8\,b\,(b\,c-a\,d)^2\,(a+b\,x)^2}-$$

$$\frac{13\,A\,B^2\,d^2\,n^2}{16\,b\,(b\,c-a\,d)^2\,(a+b\,x)^2}-\frac{79\,B^3\,d^2\,n^3}{192\,b\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\frac{3\,A^2\,B\,d^3\,n}{4\,b\,(b\,c-a\,d)^3\,(a+b\,x)}+$$

$$\frac{25\,A\,B^2\,d^3\,n^2}{8\,b\,(b\,c-a\,d)^3\,(a+b\,x)}+\frac{451\,B^3\,d^3\,n^3}{96\,b\,(b\,c-a\,d)^3\,(a+b\,x)}-\frac{3\,b\,B^3\,d^2\,n^3\,(c+d\,x)^2}{16\,(b\,c-a\,d)^4\,(a+b\,x)^2}+$$

$$\frac{3\,A^2\,B\,d^4\,n\,\mathrm{Log}[a+b\,x]}{4\,b\,(b\,c-a\,d)^4}+\frac{13\,A\,B^2\,d^4\,n^2\,\mathrm{Log}[a+b\,x]}{8\,b\,(b\,c-a\,d)^4}+\frac{79\,B^3\,d^4\,n^3\,\mathrm{Log}[a+b\,x]}{96\,b\,(b\,c-a\,d)^4}-$$

$$\frac{3\,A^2\,B\,d^4\,n\,\mathrm{Log}[c+d\,x]}{4\,b\,(b\,c-a\,d)^4}-\frac{13\,A\,B^2\,d^4\,n^2\,\mathrm{Log}[c+d\,x]}{8\,b\,(b\,c-a\,d)^4}-\frac{79\,B^3\,d^4\,n^3\,\mathrm{Log}[c+d\,x]}{96\,b\,(b\,c-a\,d)^4}-$$

$$\frac{3\,A^2\,B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{4\,b\,(a+b\,x)^4}-\frac{3\,A\,B^2\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{8\,b\,(a+b\,x)^4}-$$

$$\frac{3\,B^3\,n^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{32\,b\,(a+b\,x)^4}+\frac{A\,B^2\,d\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{2\,b\,(b\,c-a\,d)\,(a+b\,x)^3}+$$

$$\frac{7\,B^3\,d\,n^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{24\,b\,(b\,c-a\,d)\,(a+b\,x)^3}-\frac{3\,A\,B^2\,d^2\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{4\,b\,(b\,c-a\,d)^2\,(a+b\,x)^2}-$$

$$\frac{7\,B^3\,d^2\,n^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{16\,b\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\frac{3\,A\,B^2\,d^3\,n\,(c+d\,x)\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{2\,(b\,c-a\,d)^4\,(a+b\,x)}+$$

$$\frac{31\,B^3\,d^3\,n^2\,(c+d\,x)\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{8\,(b\,c-a\,d)^4\,(a+b\,x)}-\frac{3\,b\,B^3\,d^2\,n^2\,(c+d\,x)^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{8\,(b\,c-a\,d)^4\,(a+b\,x)^2}-$$

$$\frac{3\,A\,B^2\,d^4\,n\,\mathrm{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{2\,b\,(b\,c-a\,d)^4}-$$

$$\frac{7\,B^3\,d^4\,n^2\,\mathrm{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{8\,b\,(b\,c-a\,d)^4}+$$

$$\frac{3\,A\,B^2\,d^4\,n\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{2\,b\,(b\,c-a\,d)^4}+$$

$$\frac{7\,B^3\,d^4\,n^2\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{8\,b\,(b\,c-a\,d)^4}-\frac{3\,A\,B^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{4\,b\,(a+b\,x)^4}-$$

$$\frac{3\,B^3\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{16\,b\,(a+b\,x)^4}+\frac{B^3\,d\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{4\,b\,(b\,c-a\,d)\,(a+b\,x)^3}+$$

$$\frac{3\,B^3\,d^3\,n\,(c+d\,x)\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{2\,(b\,c-a\,d)^4\,(a+b\,x)}-\frac{3\,b\,B^3\,d^2\,n\,(c+d\,x)^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{8\,(b\,c-a\,d)^4\,(a+b\,x)^2}-$$

$$\frac{3\,B^3\,d^4\,n\,\mathrm{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{4\,b\,(b\,c-a\,d)^4}+$$

$$\frac{3 B^3 d^4 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{4 b (b c-a d)^4}-\frac{B^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3}{4 b (a+b x)^4}+$$
$$\frac{3 A B^2 d^4 n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{2 b (b c-a d)^4}+\frac{7 B^3 d^4 n^3 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{8 b (b c-a d)^4}+$$
$$\frac{3 A B^2 d^4 n^2 \text{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{2 b (b c-a d)^4}+\frac{7 B^3 d^4 n^3 \text{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{8 b (b c-a d)^4}+$$
$$\frac{3 B^3 d^4 n^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \text{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{2 b (b c-a d)^4}+$$
$$\frac{3 B^3 d^4 n^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \text{PolyLog}\left[2, 1-\frac{b c-a d}{b (c+d x)}\right]}{2 b (b c-a d)^4}+$$
$$\frac{3 B^3 d^4 n^3 \text{PolyLog}\left[3, 1+\frac{b c-a d}{d (a+b x)}\right]}{2 b (b c-a d)^4}-\frac{3 B^3 d^4 n^3 \text{PolyLog}\left[3, 1-\frac{b c-a d}{b (c+d x)}\right]}{2 b (b c-a d)^4}$$

Problem 172: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)} \, dx$$

Optimal (type 4, 96 leaves, 4 steps):

$$\left(e^{\frac{A}{B n}} (c+d x) \left(e (a+b x)^n (c+d x)^{-n}\right)^{\frac{1}{n}} \text{ExpIntegralEi}\left[-\frac{A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{B n}\right]\right) \Big/ \left(B (b c-a d) g^2 n (a+b x)\right)$$

Result (type 8, 38 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g+b g x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}, x\right]$$

Problem 177: Result valid but suboptimal antiderivative.

$$\int \frac{A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]}{a g+b g x} \, dx$$

Optimal (type 4, 81 leaves, 5 steps):

$$-\frac{\text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{b g}-\frac{B \text{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{b g}$$

Result (type 4, 122 leaves, 10 steps):

$$\frac{B\,\text{Log}\left[g\,(a+b\,x)\right]^2}{2\,b\,g}-\frac{B\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[a\,g+b\,g\,x\right]}{b\,g}+\frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)\,\text{Log}\left[a\,g+b\,g\,x\right]}{b\,g}-\frac{B\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}$$

Problem 178: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 3, 64 leaves, 3 steps):

$$-\frac{A-B}{b\,g^2\,(a+b\,x)}-\frac{B\,(c+d\,x)\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}{(b\,c-a\,d)\,g^2\,(a+b\,x)}$$

Result (type 3, 101 leaves, 4 steps):

$$\frac{B}{b\,g^2\,(a+b\,x)}+\frac{B\,d\,\text{Log}[a+b\,x]}{b\,(b\,c-a\,d)\,g^2}-\frac{B\,d\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)\,g^2}-\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}{b\,g^2\,(a+b\,x)}$$

Problem 182: Result valid but suboptimal antiderivative.

$$\int(a\,g+b\,g\,x)^4\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2\,dx$$

Optimal (type 4, 503 leaves, 19 steps):

$$\frac{13\,B^2\,(b\,c-a\,d)^4\,g^4\,x}{30\,d^4}-\frac{7\,B^2\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}{60\,b\,d^3}+\frac{B^2\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3}{30\,b\,d^2}-\frac{5\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}[a+b\,x]}{6\,b\,d^5}-\frac{13\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}\left[\frac{c+d\,x}{a+b\,x}\right]}{30\,b\,d^5}+\frac{B\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{5\,b\,d^3}-\frac{2\,B\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{15\,b\,d^2}+\frac{B\,(b\,c-a\,d)\,g^4\,(a+b\,x)^4\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{10\,b\,d}-\frac{2\,B\,(b\,c-a\,d)^4\,g^4\,(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{5\,d^5}+\frac{g^4\,(a+b\,x)^5\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{5\,b}-\frac{2\,B\,(b\,c-a\,d)^5\,g^4\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)\,\text{Log}\left[1-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{5\,b\,d^5}+\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{5\,b\,d^5}$$

Result (type 4, 557 leaves, 28 steps):

$$-\frac{2\,A\,B\,(b\,c-a\,d)^4\,g^4\,x}{5\,d^4}+\frac{13\,B^2\,(b\,c-a\,d)^4\,g^4\,x}{30\,d^4}-\frac{7\,B^2\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}{60\,b\,d^3}+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3}{30\,b\,d^2}-\frac{5\,B^2\,(b\,c-a\,d)^5\,g^4\,\mathrm{Log}[c+d\,x]}{6\,b\,d^5}+$$
$$\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{5\,b\,d^5}-\frac{B^2\,(b\,c-a\,d)^5\,g^4\,\mathrm{Log}[c+d\,x]^2}{5\,b\,d^5}-$$
$$\frac{2\,B^2\,(b\,c-a\,d)^4\,g^4\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}{5\,b\,d^4}+\frac{B\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{5\,b\,d^3}-$$
$$\frac{2\,B\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{15\,b\,d^2}+\frac{B\,(b\,c-a\,d)\,g^4\,(a+b\,x)^4\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{10\,b\,d}+$$
$$\frac{2\,B\,(b\,c-a\,d)^5\,g^4\,\mathrm{Log}[c+d\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{5\,b\,d^5}+$$
$$\frac{g^4\,(a+b\,x)^5\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{5\,b}+\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{5\,b\,d^5}$$

Problem 183: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2\,dx$$

Optimal (type 4, 420 leaves, 15 steps):

$$-\frac{5\,B^2\,(b\,c-a\,d)^3\,g^3\,x}{12\,d^3}+\frac{B^2\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)^2}{12\,b\,d^2}+$$
$$\frac{11\,B^2\,(b\,c-a\,d)^4\,g^3\,\mathrm{Log}[a+b\,x]}{12\,b\,d^4}+\frac{5\,B^2\,(b\,c-a\,d)^4\,g^3\,\mathrm{Log}\left[\frac{c+d\,x}{a+b\,x}\right]}{12\,b\,d^4}-$$
$$\frac{B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{4\,b\,d^2}+\frac{B\,(b\,c-a\,d)\,g^3\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{6\,b\,d}+$$
$$\frac{B\,(b\,c-a\,d)^3\,g^3\,(c+d\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{2\,d^4}+\frac{g^3\,(a+b\,x)^4\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{4\,b}+$$
$$\frac{B\,(b\,c-a\,d)^4\,g^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)\,\mathrm{Log}\left[1-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{2\,b\,d^4}-\frac{B^2\,(b\,c-a\,d)^4\,g^3\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{2\,b\,d^4}$$

Result (type 4, 474 leaves, 24 steps):

$$\frac{A B (b c-a d)^3 g^3 x}{2 d^3}-\frac{5 B^2 (b c-a d)^3 g^3 x}{12 d^3}+\frac{B^2 (b c-a d)^2 g^3 (a+b x)^2}{12 b d^2}+$$
$$\frac{11 B^2 (b c-a d)^4 g^3 \text{Log}[c+d x]}{12 b d^4}-\frac{B^2 (b c-a d)^4 g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{2 b d^4}+$$
$$\frac{B^2 (b c-a d)^4 g^3 \text{Log}[c+d x]^2}{4 b d^4}+\frac{B^2 (b c-a d)^3 g^3 (a+b x) \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]}{2 b d^3}-$$
$$\frac{B (b c-a d)^2 g^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{4 b d^2}+\frac{B (b c-a d) g^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{6 b d}-$$
$$\frac{B (b c-a d)^4 g^3 \text{Log}[c+d x] \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{2 b d^4}+$$
$$\frac{g^3 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}{4 b}-\frac{B^2 (b c-a d)^4 g^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{2 b d^4}$$

Problem 184: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2 \, dx$$

Optimal (type 4, 335 leaves, 11 steps):

$$\frac{B^2 (b c-a d)^2 g^2 x}{3 d^2}-\frac{B^2 (b c-a d)^3 g^2 \text{Log}[a+b x]}{b d^3}-$$
$$\frac{B^2 (b c-a d)^3 g^2 \text{Log}\left[\frac{c+d x}{a+b x}\right]}{3 b d^3}+\frac{B (b c-a d) g^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{3 b d}-$$
$$\frac{2 B (b c-a d)^2 g^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{3 d^3}+\frac{g^2 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}{3 b}-$$
$$\frac{2 B (b c-a d)^3 g^2 \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right) \text{Log}\left[1-\frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}+\frac{2 B^2 (b c-a d)^3 g^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}$$

Result (type 4, 389 leaves, 20 steps):

$$-\frac{2\,A\,B\,(b\,c-a\,d)^2\,g^2\,x}{3\,d^2}+\frac{B^2\,(b\,c-a\,d)^2\,g^2\,x}{3\,d^2}-\frac{B^2\,(b\,c-a\,d)^3\,g^2\,Log[c+d\,x]}{b\,d^3}+$$
$$\frac{2\,B^2\,(b\,c-a\,d)^3\,g^2\,Log\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,Log[c+d\,x]}{3\,b\,d^3}-\frac{B^2\,(b\,c-a\,d)^3\,g^2\,Log[c+d\,x]^2}{3\,b\,d^3}-$$
$$\frac{2\,B^2\,(b\,c-a\,d)^2\,g^2\,(a+b\,x)\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}{3\,b\,d^2}+\frac{B\,(b\,c-a\,d)\,g^2\,(a+b\,x)^2\,\left(A+B\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{3\,b\,d}+$$
$$\frac{2\,B\,(b\,c-a\,d)^3\,g^2\,Log[c+d\,x]\,\left(A+B\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{3\,b\,d^3}+$$
$$\frac{g^2\,(a+b\,x)^3\,\left(A+B\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{3\,b}+\frac{2\,B^2\,(b\,c-a\,d)^3\,g^2\,PolyLog\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b\,d^3}$$

Problem 185: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)\,\left(A+B\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2\,dx$$

Optimal (type 4, 202 leaves, 7 steps):

$$\frac{B^2\,(b\,c-a\,d)^2\,g\,Log[a+b\,x]}{b\,d^2}+$$
$$\frac{B\,(b\,c-a\,d)\,g\,(c+d\,x)\,\left(A+B\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{d^2}+\frac{g\,(a+b\,x)^2\,\left(A+B\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{2\,b}+$$
$$\frac{B\,(b\,c-a\,d)^2\,g\,\left(A+B\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)\,Log\left[1-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,d^2}-\frac{B^2\,(b\,c-a\,d)^2\,g\,PolyLog\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,d^2}$$

Result (type 4, 284 leaves, 16 steps):

$$\frac{A\,B\,(b\,c-a\,d)\,g\,x}{d}+\frac{B^2\,(b\,c-a\,d)^2\,g\,Log[c+d\,x]}{b\,d^2}-$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g\,Log\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,Log[c+d\,x]}{b\,d^2}+\frac{B^2\,(b\,c-a\,d)^2\,g\,Log[c+d\,x]^2}{2\,b\,d^2}+$$
$$\frac{B^2\,(b\,c-a\,d)\,g\,(a+b\,x)\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}{b\,d}-\frac{B\,(b\,c-a\,d)^2\,g\,Log[c+d\,x]\,\left(A+B\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{b\,d^2}+$$
$$\frac{g\,(a+b\,x)^2\,\left(A+B\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{2\,b}-\frac{B^2\,(b\,c-a\,d)^2\,g\,PolyLog\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,d^2}$$

Problem 186: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B\,Log\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 128 leaves, 4 steps):

$$-\frac{\text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}{b g}-\frac{2 B \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b g}+\frac{2 B^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b g}$$

Result (type 4, 719 leaves, 47 steps):

$$\frac{A B \text{Log}[g (a+b x)]^2}{b g}+\frac{B^2 \text{Log}[g (a+b x)]^3}{3 b g}-\frac{B^2 \text{Log}\left[\frac{1}{a+b x}\right]^2 \text{Log}[c+d x]}{b g}-\frac{2 B^2 \text{Log}\left[\frac{1}{a+b x}\right] \text{Log}[g (a+b x)] \text{Log}[c+d x]}{b g}-\frac{B^2 \text{Log}[g (a+b x)]^2 \text{Log}[c+d x]}{b g}+\frac{B^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]^2}{b g}-\frac{B^2 \text{Log}[g (a+b x)] \text{Log}[c+d x]^2}{b g}+\frac{B^2 \text{Log}\left[\frac{1}{a+b x}\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b g}+\frac{B^2 \text{Log}[g (a+b x)]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b g}-\frac{2 A B \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}[a g+b g x]}{b g}+\frac{1}{b g}2 B^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \left(\text{Log}\left[\frac{1}{a+b x}\right]+\text{Log}[c+d x]-\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right) \text{Log}[a g+b g x]+\frac{\left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2 \text{Log}[a g+b g x]}{b g}-\frac{B^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}[a g+b g x]^2}{b g}+\frac{B^2 \text{Log}\left[\frac{e (c+d x)}{a+b x}\right] \text{Log}[a g+b g x]^2}{b g}-\frac{2 A B \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b g}-\frac{2 B^2 \text{Log}\left[\frac{1}{a+b x}\right] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b g}+\frac{2 B^2 \left(\text{Log}\left[\frac{1}{a+b x}\right]+\text{Log}[c+d x]-\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right) \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b g}+\frac{2 B^2 \text{Log}[c+d x] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b g}-\frac{2 B^2 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{b g}-\frac{2 B^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{b g}$$

Problem 187: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}{(a g+b g x)^2} \, dx$$

Optimal (type 3, 153 leaves, 4 steps):

$$\frac{2\,A\,B\,(c+d\,x)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{2\,B^2\,(c+d\,x)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}+\frac{2\,B^2\,(c+d\,x)\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{(b\,c-a\,d)\,g^2\,(a+b\,x)}$$

Result (type 4, 470 leaves, 26 steps):

$$-\frac{2\,B^2}{b\,g^2\,(a+b\,x)}-\frac{2\,B^2\,d\,\text{Log}[a+b\,x]}{b\,(b\,c-a\,d)\,g^2}+\frac{B^2\,d\,\text{Log}[a+b\,x]^2}{b\,(b\,c-a\,d)\,g^2}+\frac{2\,B^2\,d\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)\,g^2}-\frac{2\,B^2\,d\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)\,g^2}+\frac{B^2\,d\,\text{Log}[c+d\,x]^2}{b\,(b\,c-a\,d)\,g^2}-\frac{2\,B^2\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,(b\,c-a\,d)\,g^2}+\frac{2\,B\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{b\,g^2\,(a+b\,x)}+\frac{2\,B\,d\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{b\,(b\,c-a\,d)\,g^2}-\frac{2\,B\,d\,\text{Log}[c+d\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{b\,(b\,c-a\,d)\,g^2}-\frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{b\,g^2\,(a+b\,x)}-\frac{2\,B^2\,d\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,(b\,c-a\,d)\,g^2}-\frac{2\,B^2\,d\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,(b\,c-a\,d)\,g^2}$$

Problem 188: Result unnecessarily involves higher level functions.

$$\int\frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 3, 296 leaves, 8 steps):

$$-\frac{2\,A\,B\,d\,(c+d\,x)}{(b\,c-a\,d)^2\,g^3\,(a+b\,x)}+\frac{2\,B^2\,d\,(c+d\,x)}{(b\,c-a\,d)^2\,g^3\,(a+b\,x)}-\frac{b\,B^2\,(c+d\,x)^2}{4\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)^2}-\frac{2\,B^2\,d\,(c+d\,x)\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}{(b\,c-a\,d)^2\,g^3\,(a+b\,x)}+\frac{b\,B\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{2\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)^2}+\frac{d\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{(b\,c-a\,d)^2\,g^3\,(a+b\,x)}-\frac{b\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{2\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)^2}$$

Result (type 4, 578 leaves, 30 steps):

$$-\frac{B^2}{4\,b\,g^3\,(a+b\,x)^2}+\frac{3\,B^2\,d}{2\,b\,(b\,c-a\,d)\,g^3\,(a+b\,x)}+\frac{3\,B^2\,d^2\,\text{Log}[a+b\,x]}{2\,b\,(b\,c-a\,d)^2\,g^3}-\frac{B^2\,d^2\,\text{Log}[a+b\,x]^2}{2\,b\,(b\,c-a\,d)^2\,g^3}-$$
$$\frac{3\,B^2\,d^2\,\text{Log}[c+d\,x]}{2\,b\,(b\,c-a\,d)^2\,g^3}+\frac{B^2\,d^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)^2\,g^3}-\frac{B^2\,d^2\,\text{Log}[c+d\,x]^2}{2\,b\,(b\,c-a\,d)^2\,g^3}+$$
$$\frac{B^2\,d^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,(b\,c-a\,d)^2\,g^3}+\frac{B\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{2\,b\,g^3\,(a+b\,x)^2}-\frac{B\,d\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{b\,(b\,c-a\,d)\,g^3\,(a+b\,x)}-$$
$$\frac{B\,d^2\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{b\,(b\,c-a\,d)^2\,g^3}+\frac{B\,d^2\,\text{Log}[c+d\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{b\,(b\,c-a\,d)^2\,g^3}-$$
$$\frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{2\,b\,g^3\,(a+b\,x)^2}+\frac{B^2\,d^2\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,(b\,c-a\,d)^2\,g^3}+\frac{B^2\,d^2\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,(b\,c-a\,d)^2\,g^3}$$

Problem 189: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 3, 399 leaves, 6 steps):

$$-\frac{2\,B^2\,d^2\,(c+d\,x)}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)}+\frac{b\,B^2\,d\,(c+d\,x)^2}{2\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}-$$
$$\frac{2\,b^2\,B^2\,(c+d\,x)^3}{27\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^3}+\frac{B^2\,d^3\,\text{Log}\left[\frac{c+d\,x}{a+b\,x}\right]^2}{3\,b\,(b\,c-a\,d)^3\,g^4}+\frac{2\,B\,d^2\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)}-$$
$$\frac{b\,B\,d\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}+\frac{2\,b^2\,B\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{9\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^3}-$$
$$\frac{2\,B\,d^3\,\text{Log}\left[\frac{c+d\,x}{a+b\,x}\right]\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{3\,b\,(b\,c-a\,d)^3\,g^4}-\frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{3\,b\,g^4\,(a+b\,x)^3}$$

Result (type 4, 680 leaves, 34 steps):

$$-\frac{2 B^2}{27 b g^4 (a+b x)^3}+\frac{5 B^2 d}{18 b (b c-a d) g^4 (a+b x)^2}-\frac{11 B^2 d^2}{9 b (b c-a d)^2 g^4 (a+b x)}-\frac{11 B^2 d^3 \text{Log}[a+b x]}{9 b (b c-a d)^3 g^4}+\frac{B^2 d^3 \text{Log}[a+b x]^2}{3 b (b c-a d)^3 g^4}+\frac{11 B^2 d^3 \text{Log}[c+d x]}{9 b (b c-a d)^3 g^4}-\frac{2 B^2 d^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 b (b c-a d)^3 g^4}+\frac{B^2 d^3 \text{Log}[c+d x]^2}{3 b (b c-a d)^3 g^4}-\frac{2 B^2 d^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b (b c-a d)^3 g^4}+\frac{2 B \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{9 b g^4 (a+b x)^3}-\frac{B d \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{3 b (b c-a d) g^4 (a+b x)^2}+\frac{2 B d^2 \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{3 b (b c-a d)^2 g^4 (a+b x)}+\frac{2 B d^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{3 b (b c-a d)^3 g^4}-\frac{2 B d^3 \text{Log}[c+d x] \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{3 b (b c-a d)^3 g^4}-\frac{\left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}{3 b g^4 (a+b x)^3}-\frac{2 B^2 d^3 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 b (b c-a d)^3 g^4}-\frac{2 B^2 d^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 b (b c-a d)^3 g^4}$$

Problem 190: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}{(a g+b g x)^5} \, dx$$

Optimal (type 3, 498 leaves, 5 steps):

$$\frac{2 B^2 d^3 (c+d x)}{(b c-a d)^4 g^5 (a+b x)}-\frac{3 b B^2 d^2 (c+d x)^2}{4 (b c-a d)^4 g^5 (a+b x)^2}+\frac{2 b^2 B^2 d (c+d x)^3}{9 (b c-a d)^4 g^5 (a+b x)^3}-\frac{b^3 B^2 (c+d x)^4}{32 (b c-a d)^4 g^5 (a+b x)^4}-\frac{B^2 d^4 \text{Log}\left[\frac{c+d x}{a+b x}\right]^2}{4 b (b c-a d)^4 g^5}-\frac{2 B d^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{(b c-a d)^4 g^5 (a+b x)}+\frac{3 b B d^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{2 (b c-a d)^4 g^5 (a+b x)^2}-\frac{2 b^2 B d (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{3 (b c-a d)^4 g^5 (a+b x)^3}+\frac{b^3 B (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{8 (b c-a d)^4 g^5 (a+b x)^4}+\frac{B d^4 \text{Log}\left[\frac{c+d x}{a+b x}\right] \left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{2 b (b c-a d)^4 g^5}-\frac{\left(A+B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}{4 b g^5 (a+b x)^4}$$

Result (type 4, 763 leaves, 38 steps):

$$-\frac{B^2}{32\,b\,g^5\,(a+b\,x)^4}+\frac{7\,B^2\,d}{72\,b\,(b\,c-a\,d)\,g^5\,(a+b\,x)^3}-\frac{13\,B^2\,d^2}{48\,b\,(b\,c-a\,d)^2\,g^5\,(a+b\,x)^2}+\frac{25\,B^2\,d^3}{24\,b\,(b\,c-a\,d)^3\,g^5\,(a+b\,x)}+\frac{25\,B^2\,d^4\,\mathrm{Log}[a+b\,x]}{24\,b\,(b\,c-a\,d)^4\,g^5}-\frac{B^2\,d^4\,\mathrm{Log}[a+b\,x]^2}{4\,b\,(b\,c-a\,d)^4\,g^5}-\frac{25\,B^2\,d^4\,\mathrm{Log}[c+d\,x]}{24\,b\,(b\,c-a\,d)^4\,g^5}+\frac{B^2\,d^4\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{2\,b\,(b\,c-a\,d)^4\,g^5}-\frac{B^2\,d^4\,\mathrm{Log}[c+d\,x]^2}{4\,b\,(b\,c-a\,d)^4\,g^5}+\frac{B^2\,d^4\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{2\,b\,(b\,c-a\,d)^4\,g^5}+\frac{B\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{8\,b\,g^5\,(a+b\,x)^4}-\frac{B\,d\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{6\,b\,(b\,c-a\,d)\,g^5\,(a+b\,x)^3}+\frac{B\,d^2\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{4\,b\,(b\,c-a\,d)^2\,g^5\,(a+b\,x)^2}-\frac{B\,d^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{2\,b\,(b\,c-a\,d)^3\,g^5\,(a+b\,x)}-\frac{B\,d^4\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{2\,b\,(b\,c-a\,d)^4\,g^5}+\frac{B\,d^4\,\mathrm{Log}[c+d\,x]\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{2\,b\,(b\,c-a\,d)^4\,g^5}-\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{4\,b\,g^5\,(a+b\,x)^4}+\frac{B^2\,d^4\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{2\,b\,(b\,c-a\,d)^4\,g^5}+\frac{B^2\,d^4\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{2\,b\,(b\,c-a\,d)^4\,g^5}$$

Problem 191: Result valid but suboptimal antiderivative.

$$\int \frac{(a\,g+b\,g\,x)^2}{A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\mathrm{Unintegrable}\left[\frac{(a\,g+b\,g\,x)^2}{A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]},\,x\right]$$

Result (type 8, 97 leaves, 2 steps):

$$a^2\,g^2\,\mathrm{CannotIntegrate}\left[\frac{1}{A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]},\,x\right]+2\,a\,b\,g^2\,\mathrm{CannotIntegrate}\left[\frac{x}{A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]},\,x\right]+b^2\,g^2\,\mathrm{CannotIntegrate}\left[\frac{x^2}{A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]},\,x\right]$$

Problem 192: Result valid but suboptimal antiderivative.

$$\int \frac{a\,g+b\,g\,x}{A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}\,dx$$

Optimal (type 8, 32 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{a\,g+b\,g\,x}{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]},\,x\right]$$

Result (type 8, 55 leaves, 2 steps):

$$a\,g\,\text{CannotIntegrate}\left[\frac{1}{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]},\,x\right]+b\,g\,\text{CannotIntegrate}\left[\frac{x}{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]},\,x\right]$$

Problem 193: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)},\,x\right]$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)},\,x\right]$$

Problem 194: Unable to integrate problem.

$$\int \frac{1}{(a\,g+b\,g\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}\,dx$$

Optimal (type 4, 53 leaves, 3 steps):

$$-\frac{e^{-\frac{A}{B}}\,\text{ExpIntegralEi}\left[\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}{B}\right]}{B\,(b\,c-a\,d)\,e\,g^2}$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)},\,x\right]$$

Problem 195: Unable to integrate problem.

$$\int \frac{1}{(a\,g+b\,g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}\,dx$$

Optimal (type 4, 109 leaves, 7 steps):

$$\frac{d\, e^{-\frac{A}{B}}\, \text{ExpIntegralEi}\left[\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}{B}\right]}{B\,(b\,c-a\,d)^2\, e\, g^3}-\frac{b\, e^{-\frac{2A}{B}}\, \text{ExpIntegralEi}\left[\frac{2\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{B}\right]}{B\,(b\,c-a\,d)^2\, e^2\, g^3}$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)},\ x\right]$$

Problem 196: Result valid but suboptimal antiderivative.

$$\int \frac{(a\,g+b\,g\,x)^2}{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}\,dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(a\,g+b\,g\,x)^2}{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2},\ x\right]$$

Result (type 8, 97 leaves, 2 steps):

$$a^2\,g^2\,\text{CannotIntegrate}\left[\frac{1}{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2},\ x\right]+$$
$$2\,a\,b\,g^2\,\text{CannotIntegrate}\left[\frac{x}{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2},\ x\right]+$$
$$b^2\,g^2\,\text{CannotIntegrate}\left[\frac{x^2}{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2},\ x\right]$$

Problem 197: Result valid but suboptimal antiderivative.

$$\int \frac{a\,g+b\,g\,x}{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}\,dx$$

Optimal (type 8, 32 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{a\,g+b\,g\,x}{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2},\ x\right]$$

Result (type 8, 55 leaves, 2 steps):

$$a\,g\,\text{CannotIntegrate}\left[\frac{1}{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2},\ x\right]+b\,g\,\text{CannotIntegrate}\left[\frac{x}{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2},\ x\right]$$

Problem 198: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(a g + b g x) \left(A + B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2} \, dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(a g + b g x) \left(A + B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}, x\right]$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g + b g x) \left(A + B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}, x\right]$$

Problem 199: Unable to integrate problem.

$$\int \frac{1}{(a g + b g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2} \, dx$$

Optimal (type 4, 104 leaves, 4 steps):

$$-\frac{e^{-\frac{A}{B}} \text{ExpIntegralEi}\left[\frac{A+B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]}{B}\right]}{B^2 (b c - a d) e g^2} + \frac{c + d x}{B (b c - a d) g^2 (a + b x) \left(A + B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g + b g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}, x\right]$$

Problem 200: Unable to integrate problem.

$$\int \frac{1}{(a g + b g x)^3 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2} \, dx$$

Optimal (type 4, 159 leaves, 10 steps):

$$\frac{d e^{-\frac{A}{B}} \text{ExpIntegralEi}\left[\frac{A+B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]}{B}\right]}{B^2 (b c - a d)^2 e g^3} - \frac{2 b e^{-\frac{2 A}{B}} \text{ExpIntegralEi}\left[\frac{2 \left(A+B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{B}\right]}{B^2 (b c - a d)^2 e^2 g^3} + \frac{c + d x}{B (b c - a d) g^3 (a + b x)^2 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}$$

Result (type 8, 34 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2},\,x\right]$$

Problem 205: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 83 leaves, 5 steps):

$$-\frac{\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{b\,g}-\frac{2\,B\,\text{PolyLog}\left[2,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b\,g}$$

Result (type 4, 121 leaves, 10 steps):

$$\frac{B\,\text{Log}[g\,(a+b\,x)]^2}{b\,g}-\frac{2\,B\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]}{b\,g}+\frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)\,\text{Log}[a\,g+b\,g\,x]}{b\,g}-\frac{2\,B\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}$$

Problem 206: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 3, 102 leaves, 3 steps):

$$-\frac{A\,(c+d\,x)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}+\frac{2\,B\,(c+d\,x)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{B\,(c+d\,x)\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{(b\,c-a\,d)\,g^2\,(a+b\,x)}$$

Result (type 3, 105 leaves, 4 steps):

$$\frac{2\,B}{b\,g^2\,(a+b\,x)}+\frac{2\,B\,d\,\text{Log}[a+b\,x]}{b\,(b\,c-a\,d)\,g^2}-\frac{2\,B\,d\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)\,g^2}-\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{b\,g^2\,(a+b\,x)}$$

Problem 210: Result valid but suboptimal antiderivative.

$$\int(a\,g+b\,g\,x)^4\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2\,dx$$

Optimal (type 4, 515 leaves, 19 steps):

$$\frac{26\,B^2\,(b\,c-a\,d)^4\,g^4\,x}{15\,d^4}-\frac{7\,B^2\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}{15\,b\,d^3}+\frac{2\,B^2\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3}{15\,b\,d^2}-\frac{10\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}[a+b\,x]}{3\,b\,d^5}-\frac{26\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}\left[\frac{c+d\,x}{a+b\,x}\right]}{15\,b\,d^5}+\frac{2\,B\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{5\,b\,d^3}-\frac{4\,B\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{15\,b\,d^2}+\frac{B\,(b\,c-a\,d)\,g^4\,(a+b\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{5\,b\,d}-\frac{4\,B\,(b\,c-a\,d)^4\,g^4\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{5\,d^5}+\frac{g^4\,(a+b\,x)^5\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}{5\,b}-\frac{4\,B\,(b\,c-a\,d)^5\,g^4\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)\,\text{Log}\left[1-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{5\,b\,d^5}+\frac{8\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{5\,b\,d^5}$$

Result (type 4, 569 leaves, 28 steps):

$$-\frac{4\,A\,B\,(b\,c-a\,d)^4\,g^4\,x}{5\,d^4}+\frac{26\,B^2\,(b\,c-a\,d)^4\,g^4\,x}{15\,d^4}-\frac{7\,B^2\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}{15\,b\,d^3}+\frac{2\,B^2\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3}{15\,b\,d^2}-\frac{10\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}[c+d\,x]}{3\,b\,d^5}+\frac{8\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{5\,b\,d^5}-\frac{4\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}[c+d\,x]^2}{5\,b\,d^5}-\frac{4\,B^2\,(b\,c-a\,d)^4\,g^4\,(a+b\,x)\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{5\,b\,d^4}+\frac{2\,B\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{5\,b\,d^3}-\frac{4\,B\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{15\,b\,d^2}+\frac{B\,(b\,c-a\,d)\,g^4\,(a+b\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{5\,b\,d}+\frac{4\,B\,(b\,c-a\,d)^5\,g^4\,\text{Log}[c+d\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{5\,b\,d^5}+\frac{g^4\,(a+b\,x)^5\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}{5\,b}+\frac{8\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{5\,b\,d^5}$$

Problem 211: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2\,dx$$

Optimal (type 4, 422 leaves, 15 steps):

$$-\frac{5 B^2 (b c-a d)^3 g^3 x}{3 d^3}+\frac{B^2 (b c-a d)^2 g^3 (a+b x)^2}{3 b d^2}+\frac{11 B^2 (b c-a d)^4 g^3 \text{Log}[a+b x]}{3 b d^4}+\frac{5 B^2 (b c-a d)^4 g^3 \text{Log}\left[\frac{c+d x}{a+b x}\right]}{3 b d^4}-\frac{B (b c-a d)^2 g^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{2 b d^2}+\frac{B (b c-a d) g^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b d}+\frac{B (b c-a d)^3 g^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{d^4}+\frac{g^3 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{4 b}+\frac{B (b c-a d)^4 g^3 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right) \text{Log}\left[1-\frac{d (a+b x)}{b (c+d x)}\right]}{b d^4}-\frac{2 B^2 (b c-a d)^4 g^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d^4}$$

Result (type 4, 469 leaves, 24 steps):

$$\frac{A B (b c-a d)^3 g^3 x}{d^3}-\frac{5 B^2 (b c-a d)^3 g^3 x}{3 d^3}+\frac{B^2 (b c-a d)^2 g^3 (a+b x)^2}{3 b d^2}+\frac{11 B^2 (b c-a d)^4 g^3 \text{Log}[c+d x]}{3 b d^4}-\frac{2 B^2 (b c-a d)^4 g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b d^4}+\frac{B^2 (b c-a d)^4 g^3 \text{Log}[c+d x]^2}{b d^4}+\frac{B^2 (b c-a d)^3 g^3 (a+b x) \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}{b d^3}-\frac{B (b c-a d)^2 g^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{2 b d^2}+\frac{B (b c-a d) g^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b d}-\frac{B (b c-a d)^4 g^3 \text{Log}[c+d x] \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{b d^4}+\frac{g^3 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{4 b}-\frac{2 B^2 (b c-a d)^4 g^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b d^4}$$

Problem 212: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2 \, dx$$

Optimal (type 4, 343 leaves, 11 steps):

$$\frac{4 B^2 (b c-a d)^2 g^2 x}{3 d^2}-\frac{4 B^2 (b c-a d)^3 g^2 \text{Log}[a+b x]}{b d^3}-\frac{4 B^2 (b c-a d)^3 g^2 \text{Log}\left[\frac{c+d x}{a+b x}\right]}{3 b d^3}+\frac{2 B (b c-a d) g^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b d}-\frac{4 B (b c-a d)^2 g^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 d^3}+\frac{g^2 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{3 b}-\frac{4 B (b c-a d)^3 g^2 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right) \text{Log}\left[1-\frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}+\frac{8 B^2 (b c-a d)^3 g^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}$$

Result (type 4, 397 leaves, 20 steps):

$$-\frac{4 A B (b c-a d)^2 g^2 x}{3 d^2}+\frac{4 B^2 (b c-a d)^2 g^2 x}{3 d^2}-\frac{4 B^2 (b c-a d)^3 g^2 \text{Log}[c+d x]}{b d^3}+\frac{8 B^2 (b c-a d)^3 g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 b d^3}-\frac{4 B^2 (b c-a d)^3 g^2 \text{Log}[c+d x]^2}{3 b d^3}-\frac{4 B^2 (b c-a d)^2 g^2 (a+b x) \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}{3 b d^2}+\frac{2 B (b c-a d) g^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b d}+\frac{4 B (b c-a d)^3 g^2 \text{Log}[c+d x] \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b d^3}+\frac{g^2 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{3 b}+\frac{8 B^2 (b c-a d)^3 g^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 b d^3}$$

Problem 213: Result valid but suboptimal antiderivative.

$$\int (a g+b g x) \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2 \, dx$$

Optimal (type 4, 211 leaves, 7 steps):

$$\frac{4 B^2 (b c-a d)^2 g \text{Log}[a+b x]}{b d^2}+\frac{2 B (b c-a d) g (c+d x) \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{d^2}+\frac{g (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{2 b}+\frac{2 B (b c-a d)^2 g \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right) \text{Log}\left[1-\frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}-\frac{4 B^2 (b c-a d)^2 g \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}$$

Result (type 4, 291 leaves, 16 steps):

$$\frac{2\,A\,B\,(b\,c-a\,d)\,g\,x}{d}+\frac{4\,B^2\,(b\,c-a\,d)^2\,g\,\mathrm{Log}[c+d\,x]}{b\,d^2}-\frac{4\,B^2\,(b\,c-a\,d)^2\,g\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{b\,d^2}+\frac{2\,B^2\,(b\,c-a\,d)^2\,g\,\mathrm{Log}[c+d\,x]^2}{b\,d^2}+\frac{2\,B^2\,(b\,c-a\,d)\,g\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{b\,d}-\frac{2\,B\,(b\,c-a\,d)^2\,g\,\mathrm{Log}[c+d\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{b\,d^2}+\frac{g\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}{2\,b}-\frac{4\,B^2\,(b\,c-a\,d)^2\,g\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,d^2}$$

Problem 214: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 132 leaves, 4 steps):

$$-\frac{\mathrm{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}{b\,g}-\frac{4\,B\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+\frac{8\,B^2\,\mathrm{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}$$

Result (type 4, 740 leaves, 46 steps):

$$\frac{2\,A\,B\,\text{Log}\left[g\,(a+b\,x)\right]^2}{b\,g}+\frac{4\,B^2\,\text{Log}\left[g\,(a+b\,x)\right]^3}{3\,b\,g}-$$
$$\frac{B^2\,\text{Log}\left[\frac{1}{(a+b\,x)^2}\right]^2\,\text{Log}[c+d\,x]}{b\,g}-\frac{4\,B^2\,\text{Log}\left[\frac{1}{(a+b\,x)^2}\right]\,\text{Log}\left[g\,(a+b\,x)\right]\,\text{Log}[c+d\,x]}{b\,g}-$$
$$\frac{4\,B^2\,\text{Log}\left[g\,(a+b\,x)\right]^2\,\text{Log}[c+d\,x]}{b\,g}+\frac{B^2\,\text{Log}\left[\frac{1}{(a+b\,x)^2}\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}+$$
$$\frac{4\,B^2\,\text{Log}\left[g\,(a+b\,x)\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}+\frac{B^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[(c+d\,x)^2\right]^2}{b\,g}-$$
$$\frac{B^2\,\text{Log}\left[g\,(a+b\,x)\right]\,\text{Log}\left[(c+d\,x)^2\right]^2}{b\,g}-\frac{4\,A\,B\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]}{b\,g}+\frac{1}{b\,g}$$
$$4\,B^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\left(\text{Log}\left[\frac{1}{(a+b\,x)^2}\right]+\text{Log}\left[(c+d\,x)^2\right]-\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)\,\text{Log}[a\,g+b\,g\,x]+$$
$$\frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2\,\text{Log}[a\,g+b\,g\,x]}{b\,g}-\frac{4\,B^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b\,g}+$$
$$\frac{2\,B^2\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b\,g}-\frac{4\,A\,B\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}-$$
$$\frac{4\,B^2\,\text{Log}\left[\frac{1}{(a+b\,x)^2}\right]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}+\frac{1}{b\,g}$$
$$4\,B^2\left(\text{Log}\left[\frac{1}{(a+b\,x)^2}\right]+\text{Log}\left[(c+d\,x)^2\right]-\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]+$$
$$\frac{4\,B^2\,\text{Log}\left[(c+d\,x)^2\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}-\frac{8\,B^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,g}-\frac{8\,B^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}$$

Problem 215: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 3, 157 leaves, 4 steps):

$$\frac{4\,A\,B\,(c+d\,x)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{8\,B^2\,(c+d\,x)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}+$$
$$\frac{4\,B^2\,(c+d\,x)\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}{(b\,c-a\,d)\,g^2\,(a+b\,x)}$$

Result (type 4, 480 leaves, 26 steps):

$$-\frac{8 B^2}{b g^2 (a+b x)}-\frac{8 B^2 d \operatorname{Log}[a+b x]}{b (b c-a d) g^2}+\frac{4 B^2 d \operatorname{Log}[a+b x]^2}{b (b c-a d) g^2}+\frac{8 B^2 d \operatorname{Log}[c+d x]}{b (b c-a d) g^2}-\frac{8 B^2 d \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{b (b c-a d) g^2}+\frac{4 B^2 d \operatorname{Log}[c+d x]^2}{b (b c-a d) g^2}-\frac{8 B^2 d \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d) g^2}+\frac{4 B \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{b g^2 (a+b x)}+\frac{4 B d \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{b (b c-a d) g^2}-\frac{4 B d \operatorname{Log}[c+d x] \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{b (b c-a d) g^2}-\frac{\left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{b g^2 (a+b x)}-\frac{8 B^2 d \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b (b c-a d) g^2}-\frac{8 B^2 d \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d) g^2}$$

Problem 216: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{(a g+b g x)^3} \, dx$$

Optimal (type 3, 299 leaves, 8 steps):

$$-\frac{4 A B d (c+d x)}{(b c-a d)^2 g^3 (a+b x)}+\frac{8 B^2 d (c+d x)}{(b c-a d)^2 g^3 (a+b x)}-\frac{b B^2 (c+d x)^2}{(b c-a d)^2 g^3 (a+b x)^2}-\frac{4 B^2 d (c+d x) \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}{(b c-a d)^2 g^3 (a+b x)}+\frac{b B (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{(b c-a d)^2 g^3 (a+b x)^2}+\frac{d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{(b c-a d)^2 g^3 (a+b x)}-\frac{b (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{2 (b c-a d)^2 g^3 (a+b x)^2}$$

Result (type 4, 578 leaves, 30 steps):

$$-\frac{B^2}{b\,g^3\,(a+b\,x)^2}+\frac{6\,B^2\,d}{b\,(b\,c-a\,d)\,g^3\,(a+b\,x)}+\frac{6\,B^2\,d^2\,\text{Log}[a+b\,x]}{b\,(b\,c-a\,d)^2\,g^3}-\frac{2\,B^2\,d^2\,\text{Log}[a+b\,x]^2}{b\,(b\,c-a\,d)^2\,g^3}-$$

$$\frac{6\,B^2\,d^2\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)^2\,g^3}+\frac{4\,B^2\,d^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)^2\,g^3}-\frac{2\,B^2\,d^2\,\text{Log}[c+d\,x]^2}{b\,(b\,c-a\,d)^2\,g^3}+$$

$$\frac{4\,B^2\,d^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,(b\,c-a\,d)^2\,g^3}+\frac{B\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{b\,g^3\,(a+b\,x)^2}-\frac{2\,B\,d\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{b\,(b\,c-a\,d)\,g^3\,(a+b\,x)}-$$

$$\frac{2\,B\,d^2\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{b\,(b\,c-a\,d)^2\,g^3}+\frac{2\,B\,d^2\,\text{Log}[c+d\,x]\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{b\,(b\,c-a\,d)^2\,g^3}-$$

$$\frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}{2\,b\,g^3\,(a+b\,x)^2}+\frac{4\,B^2\,d^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b\,(b\,c-a\,d)^2\,g^3}+\frac{4\,B^2\,d^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,(b\,c-a\,d)^2\,g^3}$$

Problem 217: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 3, 407 leaves, 6 steps):

$$-\frac{8\,B^2\,d^2\,(c+d\,x)}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)}+\frac{2\,b\,B^2\,d\,(c+d\,x)^2}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}-$$

$$\frac{8\,b^2\,B^2\,(c+d\,x)^3}{27\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^3}+\frac{4\,B^2\,d^3\,\text{Log}\left[\frac{c+d\,x}{a+b\,x}\right]^2}{3\,b\,(b\,c-a\,d)^3\,g^4}+\frac{4\,B\,d^2\,(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)}-$$

$$\frac{2\,b\,B\,d\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}+\frac{4\,b^2\,B\,(c+d\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{9\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^3}-$$

$$\frac{4\,B\,d^3\,\text{Log}\left[\frac{c+d\,x}{a+b\,x}\right]\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}{3\,b\,(b\,c-a\,d)^3\,g^4}-\frac{\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}{3\,b\,g^4\,(a+b\,x)^3}$$

Result (type 4, 692 leaves, 34 steps):

$$-\frac{8 B^2}{27 b g^4 (a+b x)^3}+\frac{10 B^2 d}{9 b (b c-a d) g^4 (a+b x)^2}-\frac{44 B^2 d^2}{9 b (b c-a d)^2 g^4 (a+b x)}-\frac{44 B^2 d^3 \text{Log}[a+b x]}{9 b (b c-a d)^3 g^4}+\frac{4 B^2 d^3 \text{Log}[a+b x]^2}{3 b (b c-a d)^3 g^4}+\frac{44 B^2 d^3 \text{Log}[c+d x]}{9 b (b c-a d)^3 g^4}-\frac{8 B^2 d^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 b (b c-a d)^3 g^4}+\frac{4 B^2 d^3 \text{Log}[c+d x]^2}{3 b (b c-a d)^3 g^4}-\frac{8 B^2 d^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b (b c-a d)^3 g^4}+\frac{4 B \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{9 b g^4 (a+b x)^3}-\frac{2 B d \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b (b c-a d) g^4 (a+b x)^2}+\frac{4 B d^2 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b (b c-a d)^2 g^4 (a+b x)}+\frac{4 B d^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b (b c-a d)^3 g^4}-\frac{4 B d^3 \text{Log}[c+d x] \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b (b c-a d)^3 g^4}-\frac{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{3 b g^4 (a+b x)^3}-\frac{8 B^2 d^3 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 b (b c-a d)^3 g^4}-\frac{8 B^2 d^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 b (b c-a d)^3 g^4}$$

Problem 218: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{(a g+b g x)^5} \, dx$$

Optimal (type 3, 501 leaves, 5 steps):

$$\frac{8 B^2 d^3 (c+d x)}{(b c-a d)^4 g^5 (a+b x)}-\frac{3 b B^2 d^2 (c+d x)^2}{(b c-a d)^4 g^5 (a+b x)^2}+\frac{8 b^2 B^2 d (c+d x)^3}{9 (b c-a d)^4 g^5 (a+b x)^3}-\frac{b^3 B^2 (c+d x)^4}{8 (b c-a d)^4 g^5 (a+b x)^4}-\frac{B^2 d^4 \text{Log}\left[\frac{c+d x}{a+b x}\right]^2}{b (b c-a d)^4 g^5}-\frac{4 B d^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{(b c-a d)^4 g^5 (a+b x)}+\frac{3 b B d^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{(b c-a d)^4 g^5 (a+b x)^2}-\frac{4 b^2 B d (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 (b c-a d)^4 g^5 (a+b x)^3}+\frac{b^3 B (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{4 (b c-a d)^4 g^5 (a+b x)^4}+\frac{B d^4 \text{Log}\left[\frac{c+d x}{a+b x}\right] \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{b (b c-a d)^4 g^5}-\frac{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{4 b g^5 (a+b x)^4}$$

Result (type 4, 758 leaves, 38 steps):

$$-\frac{B^2}{8 b g^5 (a+b x)^4}+\frac{7 B^2 d}{18 b (b c-a d) g^5 (a+b x)^3}-\frac{13 B^2 d^2}{12 b (b c-a d)^2 g^5 (a+b x)^2}+\frac{25 B^2 d^3}{6 b (b c-a d)^3 g^5 (a+b x)}+\frac{25 B^2 d^4 \operatorname{Log}[a+b x]}{6 b (b c-a d)^4 g^5}-\frac{B^2 d^4 \operatorname{Log}[a+b x]^2}{b (b c-a d)^4 g^5}-\frac{25 B^2 d^4 \operatorname{Log}[c+d x]}{6 b (b c-a d)^4 g^5}+\frac{2 B^2 d^4 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{b (b c-a d)^4 g^5}-\frac{B^2 d^4 \operatorname{Log}[c+d x]^2}{b (b c-a d)^4 g^5}+\frac{2 B^2 d^4 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^4 g^5}+\frac{B \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{4 b g^5 (a+b x)^4}-\frac{B d \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b (b c-a d) g^5 (a+b x)^3}+\frac{B d^2 \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{2 b (b c-a d)^2 g^5 (a+b x)^2}-\frac{B d^3 \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{b (b c-a d)^3 g^5 (a+b x)}-\frac{B d^4 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{b (b c-a d)^4 g^5}+\frac{B d^4 \operatorname{Log}[c+d x] \left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{b (b c-a d)^4 g^5}-\frac{\left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{4 b g^5 (a+b x)^4}+\frac{2 B^2 d^4 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b (b c-a d)^4 g^5}+\frac{2 B^2 d^4 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^4 g^5}$$

Problem 219: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2}{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]} \, dx$$

Optimal (type 8, 36 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(a g+b g x)^2}{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}, x\right]$$

Result (type 8, 103 leaves, 2 steps):

$$a^2 g^2 \text{CannotIntegrate}\left[\frac{1}{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}, x\right]+2 a b g^2 \text{CannotIntegrate}\left[\frac{x}{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}, x\right]+b^2 g^2 \text{CannotIntegrate}\left[\frac{x^2}{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}, x\right]$$

Problem 220: Result valid but suboptimal antiderivative.

$$\int \frac{a g+b g x}{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]} \, dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{a g+b g x}{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}, x\right]$$

Result (type 8, 59 leaves, 2 steps):

$$a g \,\text{CannotIntegrate}\left[\frac{1}{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}, x\right]+b g \,\text{CannotIntegrate}\left[\frac{x}{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}, x\right]$$

Problem 221: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(a g+b g x)\left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)} \, dx$$

Optimal (type 8, 36 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(a g+b g x)\left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}, x\right]$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g+b g x)\left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}, x\right]$$

Problem 222: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^2\left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)} \, dx$$

Optimal (type 4, 91 leaves, 3 steps):

$$-\frac{e^{-\frac{A}{2 B}} (c+d x) \,\text{ExpIntegralEi}\left[\frac{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}{2 B}\right]}{2 B (b c-a d) g^2 (a+b x) \sqrt{\frac{e (c+d x)^2}{(a+b x)^2}}}$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g+b g x)^2\left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}, x\right]$$

Problem 223: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^3\left(A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)} \, dx$$

Optimal (type 4, 151 leaves, 7 steps):

$$\frac{d\, e^{-\frac{A}{2B}} (c+d x) \text{ExpIntegralEi}\left[\frac{A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}{2 B}\right]}{2 B (b c-a d)^2 g^3 (a+b x) \sqrt{\frac{e (c+d x)^2}{(a+b x)^2}}}-\frac{b\, e^{-\frac{A}{B}} \text{ExpIntegralEi}\left[\frac{A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}{B}\right]}{2 B (b c-a d)^2 e g^3}$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a g+b g x)^3 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}, x\right]$$

Problem 224: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2}{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2} \, dx$$

Optimal (type 8, 36 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(a g+b g x)^2}{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}, x\right]$$

Result (type 8, 103 leaves, 2 steps):

$$a^2 g^2 \text{CannotIntegrate}\left[\frac{1}{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}, x\right]+$$
$$2 a b g^2 \text{CannotIntegrate}\left[\frac{x}{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}, x\right]+$$
$$b^2 g^2 \text{CannotIntegrate}\left[\frac{x^2}{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}, x\right]$$

Problem 225: Result valid but suboptimal antiderivative.

$$\int \frac{a g+b g x}{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2} \, dx$$

Optimal (type 8, 34 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{a g+b g x}{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}, x\right]$$

Result (type 8, 59 leaves, 2 steps):

$$a g \text{CannotIntegrate}\left[\frac{1}{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}, x\right]+b g \text{CannotIntegrate}\left[\frac{x}{\left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}, x\right]$$

Problem 226: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}\,dx$$

Optimal (type 8, 36 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2},\,x\right]$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2},\,x\right]$$

Problem 227: Unable to integrate problem.

$$\int \frac{1}{(a\,g+b\,g\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}\,dx$$

Optimal (type 4, 147 leaves, 4 steps):

$$-\frac{e^{-\frac{A}{2B}}\,(c+d\,x)\,\text{ExpIntegralEi}\left[\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{2B}\right]}{4\,B^2\,(b\,c-a\,d)\,g^2\,(a+b\,x)\sqrt{\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}}}+\frac{c+d\,x}{2\,B\,(b\,c-a\,d)\,g^2\,(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2},\,x\right]$$

Problem 228: Unable to integrate problem.

$$\int \frac{1}{(a\,g+b\,g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}\,dx$$

Optimal (type 4, 206 leaves, 10 steps):

$$\frac{d\,e^{-\frac{A}{2B}}\,(c+d\,x)\,\text{ExpIntegralEi}\left[\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{2\,B}\right]}{4\,B^2\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\sqrt{\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}}}-$$

$$\frac{b\,e^{-\frac{A}{B}}\,\text{ExpIntegralEi}\left[\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{B}\right]}{2\,B^2\,(b\,c-a\,d)^2\,e\,g^3}+\frac{c+d\,x}{2\,B\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}$$

Result (type 8, 36 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2},\,x\right]$$

Problem 229: Unable to integrate problem.

$$\int\frac{1}{(a\,g+b\,g\,x)^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}\,dx$$

Optimal (type 4, 96 leaves, 4 steps):

$$\left(e^{\frac{A}{B\,n}}\,(c+d\,x)\,\left(e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right)^{\frac{1}{n}}\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{B\,n}\right]\right)\Big/\left(B\,(b\,c-a\,d)\,g^2\,n\,(a+b\,x)\right)$$

Result (type 8, 38 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(a\,g+b\,g\,x)^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)},\,x\right]$$

Problem 230: Result valid but suboptimal antiderivative.

$$\int(f+g\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,dx$$

Optimal (type 3, 355 leaves, 3 steps):

$$\frac{1}{5\,b^4\,d^4}B\,(b\,c-a\,d)\,g\,\left(a^3\,d^3\,g^3-a^2\,b\,d^2\,g^2\,(5\,d\,f-c\,g)+a\,b^2\,d\,g\,\left(10\,d^2\,f^2-5\,c\,d\,f\,g+c^2\,g^2\right)-b^3\,\left(10\,d^3\,f^3-10\,c\,d^2\,f^2\,g+5\,c^2\,d\,f\,g^2-c^3\,g^3\right)\right)\,x-$$

$$\frac{1}{10\,b^3\,d^3}B\,(b\,c-a\,d)\,g^2\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(5\,d\,f-c\,g)+b^2\,\left(10\,d^2\,f^2-5\,c\,d\,f\,g+c^2\,g^2\right)\right)\,x^2-$$

$$\frac{B\,(b\,c-a\,d)\,g^3\,(5\,b\,d\,f-b\,c\,g-a\,d\,g)\,x^3}{15\,b^2\,d^2}-\frac{B\,(b\,c-a\,d)\,g^4\,x^4}{20\,b\,d}-$$

$$\frac{B\,(b\,f-a\,g)^5\,\text{Log}[a+b\,x]}{5\,b^5\,g}+\frac{(f+g\,x)^5\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,g}+\frac{B\,(d\,f-c\,g)^5\,\text{Log}[c+d\,x]}{5\,d^5\,g}$$

Result (type 3, 339 leaves, 4 steps):

$$\frac{1}{5\,b^4\,d^4}B\,g\,\left(10\,a\,b^3\,d^4\,f^3-10\,a^2\,b^2\,d^4\,f^2\,g+5\,a^3\,b\,d^4\,f\,g^2-a^4\,d^4\,g^3-b^4\,c\,\left(10\,d^3\,f^3-10\,c\,d^2\,f^2\,g+5\,c^2\,d\,f\,g^2-c^3\,g^3\right)\right)\,x-\frac{1}{10\,b^3\,d^3}B\,\left(b\,c-a\,d\right)\,g^2\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,\left(5\,d\,f-c\,g\right)+b^2\,\left(10\,d^2\,f^2-5\,c\,d\,f\,g+c^2\,g^2\right)\right)\,x^2-\frac{B\,\left(b\,c-a\,d\right)\,g^3\,\left(5\,b\,d\,f-b\,c\,g-a\,d\,g\right)\,x^3}{15\,b^2\,d^2}-\frac{B\,\left(b\,c-a\,d\right)\,g^4\,x^4}{20\,b\,d}-\frac{B\,\left(b\,f-a\,g\right)^5\,\mathrm{Log}\left[a+b\,x\right]}{5\,b^5\,g}+\frac{\left(f+g\,x\right)^5\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,g}+\frac{B\,\left(d\,f-c\,g\right)^5\,\mathrm{Log}\left[c+d\,x\right]}{5\,d^5\,g}$$

Problem 231: Result optimal but 1 more steps used.

$$\int\left(f+g\,x\right)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right]\right)\,dx$$

Optimal (type 3, 227 leaves, 3 steps):

$$-\frac{1}{4\,b^3\,d^3}B\,\left(b\,c-a\,d\right)\,g\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,\left(4\,d\,f-c\,g\right)+b^2\,\left(6\,d^2\,f^2-4\,c\,d\,f\,g+c^2\,g^2\right)\right)\,x-\frac{B\,\left(b\,c-a\,d\right)\,g^2\,\left(4\,b\,d\,f-b\,c\,g-a\,d\,g\right)\,x^2}{8\,b^2\,d^2}-\frac{B\,\left(b\,c-a\,d\right)\,g^3\,x^3}{12\,b\,d}-\frac{B\,\left(b\,f-a\,g\right)^4\,\mathrm{Log}\left[a+b\,x\right]}{4\,b^4\,g}+\frac{\left(f+g\,x\right)^4\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,g}+\frac{B\,\left(d\,f-c\,g\right)^4\,\mathrm{Log}\left[c+d\,x\right]}{4\,d^4\,g}$$

Result (type 3, 227 leaves, 4 steps):

$$-\frac{1}{4\,b^3\,d^3}B\,\left(b\,c-a\,d\right)\,g\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,\left(4\,d\,f-c\,g\right)+b^2\,\left(6\,d^2\,f^2-4\,c\,d\,f\,g+c^2\,g^2\right)\right)\,x-\frac{B\,\left(b\,c-a\,d\right)\,g^2\,\left(4\,b\,d\,f-b\,c\,g-a\,d\,g\right)\,x^2}{8\,b^2\,d^2}-\frac{B\,\left(b\,c-a\,d\right)\,g^3\,x^3}{12\,b\,d}-\frac{B\,\left(b\,f-a\,g\right)^4\,\mathrm{Log}\left[a+b\,x\right]}{4\,b^4\,g}+\frac{\left(f+g\,x\right)^4\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,g}+\frac{B\,\left(d\,f-c\,g\right)^4\,\mathrm{Log}\left[c+d\,x\right]}{4\,d^4\,g}$$

Problem 232: Result optimal but 1 more steps used.

$$\int\left(f+g\,x\right)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right]\right)\,dx$$

Optimal (type 3, 150 leaves, 3 steps):

$$-\frac{B\,\left(b\,c-a\,d\right)\,g\,\left(3\,b\,d\,f-b\,c\,g-a\,d\,g\right)\,x}{3\,b^2\,d^2}-\frac{B\,\left(b\,c-a\,d\right)\,g^2\,x^2}{6\,b\,d}-\frac{B\,\left(b\,f-a\,g\right)^3\,\mathrm{Log}\left[a+b\,x\right]}{3\,b^3\,g}+\frac{\left(f+g\,x\right)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,g}+\frac{B\,\left(d\,f-c\,g\right)^3\,\mathrm{Log}\left[c+d\,x\right]}{3\,d^3\,g}$$

Result (type 3, 150 leaves, 4 steps):

$$-\frac{B\left(b c-a d\right) g\left(3 b d f-b c g-a d g\right) x}{3 b^2 d^2}-\frac{B\left(b c-a d\right) g^2 x^2}{6 b d}-\frac{B\left(b f-a g\right)^3 \operatorname{Log}[a+b x]}{3 b^3 g}+\frac{\left(f+g x\right)^3\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 g}+\frac{B\left(d f-c g\right)^3 \operatorname{Log}[c+d x]}{3 d^3 g}$$

Problem 233: Result optimal but 1 more steps used.

$$\int\left(f+g x\right)\left(A+B \operatorname{Log}\left[\frac{e\left(a+b x\right)}{c+d x}\right]\right) dx$$

Optimal (type 3, 109 leaves, 3 steps):

$$-\frac{B\left(b c-a d\right) g x}{2 b d}-\frac{B\left(b f-a g\right)^2 \operatorname{Log}[a+b x]}{2 b^2 g}+\frac{\left(f+g x\right)^2\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 g}+\frac{B\left(d f-c g\right)^2 \operatorname{Log}[c+d x]}{2 d^2 g}$$

Result (type 3, 109 leaves, 4 steps):

$$-\frac{B\left(b c-a d\right) g x}{2 b d}-\frac{B\left(b f-a g\right)^2 \operatorname{Log}[a+b x]}{2 b^2 g}+\frac{\left(f+g x\right)^2\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 g}+\frac{B\left(d f-c g\right)^2 \operatorname{Log}[c+d x]}{2 d^2 g}$$

Problem 235: Result optimal but 3 more steps used.

$$\int\frac{A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{f+g x} dx$$

Optimal (type 4, 140 leaves, 7 steps):

$$-\frac{B \operatorname{Log}\left[-\frac{g (a+b x)}{b f-a g}\right] \operatorname{Log}[f+g x]}{g}+\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[f+g x]}{g}+\frac{B \operatorname{Log}\left[-\frac{g (c+d x)}{d f-c g}\right] \operatorname{Log}[f+g x]}{g}-\frac{B \operatorname{PolyLog}\left[2, \frac{b (f+g x)}{b f-a g}\right]}{g}+\frac{B \operatorname{PolyLog}\left[2, \frac{d (f+g x)}{d f-c g}\right]}{g}$$

Result (type 4, 140 leaves, 10 steps):

$$-\frac{B \operatorname{Log}\left[-\frac{g (a+b x)}{b f-a g}\right] \operatorname{Log}[f+g x]}{g}+\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[f+g x]}{g}+\frac{B \operatorname{Log}\left[-\frac{g (c+d x)}{d f-c g}\right] \operatorname{Log}[f+g x]}{g}-\frac{B \operatorname{PolyLog}\left[2, \frac{b (f+g x)}{b f-a g}\right]}{g}+\frac{B \operatorname{PolyLog}\left[2, \frac{d (f+g x)}{d f-c g}\right]}{g}$$

Problem 236: Result valid but suboptimal antiderivative.

$$\int \frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(f+g\,x)^2}\,dx$$

Optimal (type 3, 87 leaves, 3 steps):

$$\frac{(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,f-a\,g)\,(f+g\,x)}+\frac{B\,(b\,c-a\,d)\,\text{Log}\left[\frac{f+g\,x}{c+d\,x}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}$$

Result (type 3, 113 leaves, 4 steps):

$$\frac{b\,B\,\text{Log}[a+b\,x]}{g\,(b\,f-a\,g)}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{g\,(f+g\,x)}-\frac{B\,d\,\text{Log}[c+d\,x]}{g\,(d\,f-c\,g)}+\frac{B\,(b\,c-a\,d)\,\text{Log}[f+g\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)}$$

Problem 237: Result optimal but 1 more steps used.

$$\int \frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(f+g\,x)^3}\,dx$$

Optimal (type 3, 183 leaves, 3 steps):

$$-\frac{B\,(b\,c-a\,d)}{2\,(b\,f-a\,g)\,(d\,f-c\,g)\,(f+g\,x)}+\frac{b^2\,B\,\text{Log}[a+b\,x]}{2\,g\,(b\,f-a\,g)^2}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{2\,g\,(f+g\,x)^2}-\frac{B\,d^2\,\text{Log}[c+d\,x]}{2\,g\,(d\,f-c\,g)^2}+\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\text{Log}[f+g\,x]}{2\,(b\,f-a\,g)^2\,(d\,f-c\,g)^2}$$

Result (type 3, 183 leaves, 4 steps):

$$-\frac{B\,(b\,c-a\,d)}{2\,(b\,f-a\,g)\,(d\,f-c\,g)\,(f+g\,x)}+\frac{b^2\,B\,\text{Log}[a+b\,x]}{2\,g\,(b\,f-a\,g)^2}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{2\,g\,(f+g\,x)^2}-\frac{B\,d^2\,\text{Log}[c+d\,x]}{2\,g\,(d\,f-c\,g)^2}+\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\text{Log}[f+g\,x]}{2\,(b\,f-a\,g)^2\,(d\,f-c\,g)^2}$$

Problem 238: Result optimal but 1 more steps used.

$$\int \frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(f+g\,x)^4}\,dx$$

Optimal (type 3, 275 leaves, 3 steps):

$$-\frac{B (b c-a d)}{6 (b f-a g) (d f-c g) (f+g x)^2}-\frac{B (b c-a d) (2 b d f-b c g-a d g)}{3 (b f-a g)^2 (d f-c g)^2 (f+g x)}+\frac{b^3 B \operatorname{Log}[a+b x]}{3 g (b f-a g)^3}-\frac{A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{3 g (f+g x)^3}-\frac{B d^3 \operatorname{Log}[c+d x]}{3 g (d f-c g)^3}+\left(B (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) \operatorname{Log}[f+g x]\right)\Big/\left(3 (b f-a g)^3 (d f-c g)^3\right)$$

Result (type 3, 275 leaves, 4 steps):

$$-\frac{B (b c-a d)}{6 (b f-a g) (d f-c g) (f+g x)^2}-\frac{B (b c-a d) (2 b d f-b c g-a d g)}{3 (b f-a g)^2 (d f-c g)^2 (f+g x)}+\frac{b^3 B \operatorname{Log}[a+b x]}{3 g (b f-a g)^3}-\frac{A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{3 g (f+g x)^3}-\frac{B d^3 \operatorname{Log}[c+d x]}{3 g (d f-c g)^3}+\left(B (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) \operatorname{Log}[f+g x]\right)\Big/\left(3 (b f-a g)^3 (d f-c g)^3\right)$$

Problem 239: Result optimal but 1 more steps used.

$$\int \frac{A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(f+g x)^5} \, dx$$

Optimal (type 3, 379 leaves, 3 steps):

$$-\frac{B (b c-a d)}{12 (b f-a g) (d f-c g) (f+g x)^3}-\frac{B (b c-a d) (2 b d f-b c g-a d g)}{8 (b f-a g)^2 (d f-c g)^2 (f+g x)^2}-\left(B (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right)\right)\Big/\left(4 (b f-a g)^3 (d f-c g)^3 (f+g x)\right)+\frac{b^4 B \operatorname{Log}[a+b x]}{4 g (b f-a g)^4}-\frac{A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{4 g (f+g x)^4}-\frac{B d^4 \operatorname{Log}[c+d x]}{4 g (d f-c g)^4}-\left(B (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right) \operatorname{Log}[f+g x]\right)\Big/\left(4 (b f-a g)^4 (d f-c g)^4\right)$$

Result (type 3, 379 leaves, 4 steps):

$$-\frac{B\,(b\,c-a\,d)}{12\,(b\,f-a\,g)\,(d\,f-c\,g)\,(f+g\,x)^3}-\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)}{8\,(b\,f-a\,g)^2\,(d\,f-c\,g)^2\,(f+g\,x)^2}-\left(B\,(b\,c-a\,d)\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,\left(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2\right)\right)\right)\Big/\left(4\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3\,(f+g\,x)\right)+\frac{b^4\,B\,\text{Log}[a+b\,x]}{4\,g\,(b\,f-a\,g)^4}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{4\,g\,(f+g\,x)^4}-\frac{B\,d^4\,\text{Log}[c+d\,x]}{4\,g\,(d\,f-c\,g)^4}-\left(B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(2\,a\,b\,d^2\,f\,g-a^2\,d^2\,g^2-b^2\,\left(2\,d^2\,f^2-2\,c\,d\,f\,g+c^2\,g^2\right)\right)\,\text{Log}[f+g\,x]\right)\Big/\left(4\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right)$$

Problem 240: Result valid but suboptimal antiderivative.

$$\int (f+g\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,dx$$

Optimal (type 4, 874 leaves, 15 steps):

$$\frac{B^2\,(b\,c-a\,d)^3\,g^3\,x}{6\,b^3\,d^3}+\frac{B^2\,(b\,c-a\,d)^2\,g^2\,(4\,b\,d\,f-3\,b\,c\,g-a\,d\,g)\,x}{4\,b^3\,d^3}+\frac{B^2\,(b\,c-a\,d)^2\,g^3\,(c+d\,x)^2}{12\,b^2\,d^4}+\frac{B^2\,(b\,c-a\,d)^4\,g^3\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{6\,b^4\,d^4}+\frac{B^2\,(b\,c-a\,d)^3\,g^2\,(4\,b\,d\,f-3\,b\,c\,g-a\,d\,g)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{4\,b^4\,d^4}-\frac{1}{2\,b^4\,d^3}B\,(b\,c-a\,d)\,g\,\left(a^2\,d^2\,g^2-2\,a\,b\,d\,g\,(2\,d\,f-c\,g)+b^2\,\left(6\,d^2\,f^2-8\,c\,d\,f\,g+3\,c^2\,g^2\right)\right)\,(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)-\frac{B\,(b\,c-a\,d)\,g^2\,(4\,b\,d\,f-3\,b\,c\,g-a\,d\,g)\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b^2\,d^4}-\frac{B\,(b\,c-a\,d)\,g^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,b\,d^4}-\frac{1}{2\,b^4\,d^4}B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(2\,a\,b\,d^2\,f\,g-a^2\,d^2\,g^2-b^2\,\left(2\,d^2\,f^2-2\,c\,d\,f\,g+c^2\,g^2\right)\right)\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)-\frac{(b\,f-a\,g)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,b^4\,g}+\frac{(f+g\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,g}+\frac{B^2\,(b\,c-a\,d)^4\,g^3\,\text{Log}[c+d\,x]}{6\,b^4\,d^4}+\frac{B^2\,(b\,c-a\,d)^3\,g^2\,(4\,b\,d\,f-3\,b\,c\,g-a\,d\,g)\,\text{Log}[c+d\,x]}{4\,b^4\,d^4}+\frac{1}{2\,b^4\,d^4}B^2\,(b\,c-a\,d)^2\,g\,\left(a^2\,d^2\,g^2-2\,a\,b\,d\,g\,(2\,d\,f-c\,g)+b^2\,\left(6\,d^2\,f^2-8\,c\,d\,f\,g+3\,c^2\,g^2\right)\right)\,\text{Log}[c+d\,x]-\frac{1}{2\,b^4\,d^4}B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(2\,a\,b\,d^2\,f\,g-a^2\,d^2\,g^2-b^2\,\left(2\,d^2\,f^2-2\,c\,d\,f\,g+c^2\,g^2\right)\right)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]$$

Result (type 4, 994 leaves, 33 steps):

$$-\frac{B^2 (b c-a d)^2 (b c+a d) g^3 x}{6 b^3 d^3}+\frac{B^2 (b c-a d)^2 g^2 (4 b d f-b c g-a d g) x}{4 b^3 d^3}-\frac{1}{2 b^3 d^3}$$
$$A B (b c-a d) g \left(a^2 d^2 g^2-a b d g (4 d f-c g)+b^2 (6 d^2 f^2-4 c d f g+c^2 g^2)\right) x+$$
$$\frac{B^2 (b c-a d)^2 g^3 x^2}{12 b^2 d^2}-\frac{a^3 B^2 (b c-a d) g^3 \text{Log}[a+b x]}{6 b^4 d}+$$
$$\frac{a^2 B^2 (b c-a d) g^2 (4 b d f-b c g-a d g) \text{Log}[a+b x]}{4 b^4 d^2}+\frac{B^2 (b f-a g)^4 \text{Log}[a+b x]^2}{4 b^4 g}-$$
$$\frac{1}{2 b^4 d^3} B^2 (b c-a d) g \left(a^2 d^2 g^2-a b d g (4 d f-c g)+b^2 (6 d^2 f^2-4 c d f g+c^2 g^2)\right) (a+b x)$$
$$\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-\frac{B (b c-a d) g^2 (4 b d f-b c g-a d g) x^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 b^2 d^2}-$$
$$\frac{B (b c-a d) g^3 x^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b d}-\frac{B (b f-a g)^4 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^4 g}+$$
$$\frac{(f+g x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 g}+\frac{B^2 c^3 (b c-a d) g^3 \text{Log}[c+d x]}{6 b d^4}-$$
$$\frac{B^2 c^2 (b c-a d) g^2 (4 b d f-b c g-a d g) \text{Log}[c+d x]}{4 b^2 d^4}+\frac{1}{2 b^4 d^4}$$
$$B^2 (b c-a d)^2 g \left(a^2 d^2 g^2-a b d g (4 d f-c g)+b^2 (6 d^2 f^2-4 c d f g+c^2 g^2)\right) \text{Log}[c+d x]-$$
$$\frac{B^2 (d f-c g)^4 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{2 d^4 g}+\frac{B (d f-c g)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{2 d^4 g}+$$
$$\frac{B^2 (d f-c g)^4 \text{Log}[c+d x]^2}{4 d^4 g}-\frac{B^2 (b f-a g)^4 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{2 b^4 g}-$$
$$\frac{B^2 (b f-a g)^4 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{2 b^4 g}-\frac{B^2 (d f-c g)^4 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{2 d^4 g}$$

Problem 241: Result valid but suboptimal antiderivative.

$$\int (f+g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 532 leaves, 12 steps):

$$\frac{B^2 (b c-a d)^2 g^2 x}{3 b^2 d^2}+\frac{B^2 (b c-a d)^3 g^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^3 d^3}-$$
$$\frac{2 B (b c-a d) g (3 b d f-2 b c g-a d g) (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^3 d^2}-$$
$$\frac{B (b c-a d) g^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b d^3}+\frac{1}{3 b^3 d^3}$$
$$2 B (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]$$
$$\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)-\frac{(b f-a g)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b^3 g}+\frac{(f+g x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 g}+$$
$$\frac{B^2 (b c-a d)^3 g^2 \text{Log}[c+d x]}{3 b^3 d^3}+\frac{2 B^2 (b c-a d)^2 g (3 b d f-2 b c g-a d g) \text{Log}[c+d x]}{3 b^3 d^3}+\frac{1}{3 b^3 d^3}$$
$$2 B^2 (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]$$

Result (type 4, 649 leaves, 29 steps):

$$\frac{B^2 (b c-a d)^2 g^2 x}{3 b^2 d^2}-\frac{2 A B (b c-a d) g (3 b d f-b c g-a d g) x}{3 b^2 d^2}+\frac{a^2 B^2 (b c-a d) g^2 \text{Log}[a+b x]}{3 b^3 d}+$$
$$\frac{B^2 (b f-a g)^3 \text{Log}[a+b x]^2}{3 b^3 g}-\frac{2 B^2 (b c-a d) g (3 b d f-b c g-a d g) (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{3 b^3 d^2}-$$
$$\frac{B (b c-a d) g^2 x^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b d}-\frac{2 B (b f-a g)^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^3 g}+$$
$$\frac{(f+g x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 g}-\frac{B^2 c^2 (b c-a d) g^2 \text{Log}[c+d x]}{3 b d^3}+$$
$$\frac{2 B^2 (b c-a d)^2 g (3 b d f-b c g-a d g) \text{Log}[c+d x]}{3 b^3 d^3}-$$
$$\frac{2 B^2 (d f-c g)^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 d^3 g}+\frac{2 B (d f-c g)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{3 d^3 g}+$$
$$\frac{B^2 (d f-c g)^3 \text{Log}[c+d x]^2}{3 d^3 g}-\frac{2 B^2 (b f-a g)^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b^3 g}-$$
$$\frac{2 B^2 (b f-a g)^3 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 b^3 g}-\frac{2 B^2 (d f-c g)^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 d^3 g}$$

Problem 242: Result valid but suboptimal antiderivative.

$$\int (f+g x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \, dx$$

Optimal (type 4, 270 leaves, 9 steps):

$$-\frac{B\,(b\,c-a\,d)\,g\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,d}+$$
$$\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,d^2}-$$
$$\frac{(b\,f-a\,g)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,b^2\,g}+\frac{(f+g\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,g}+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g\,\mathrm{Log}[c+d\,x]}{b^2\,d^2}+\frac{B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^2\,d^2}$$

Result (type 4, 444 leaves, 25 steps):

$$-\frac{A\,B\,(b\,c-a\,d)\,g\,x}{b\,d}+\frac{B^2\,(b\,f-a\,g)^2\,\mathrm{Log}[a+b\,x]^2}{2\,b^2\,g}-$$
$$\frac{B^2\,(b\,c-a\,d)\,g\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b^2\,d}-\frac{B\,(b\,f-a\,g)^2\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g}+$$
$$\frac{(f+g\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,g}+\frac{B^2\,(b\,c-a\,d)^2\,g\,\mathrm{Log}[c+d\,x]}{b^2\,d^2}-$$
$$\frac{B^2\,(d\,f-c\,g)^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{d^2\,g}+\frac{B\,(d\,f-c\,g)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]}{d^2\,g}+$$
$$\frac{B^2\,(d\,f-c\,g)^2\,\mathrm{Log}[c+d\,x]^2}{2\,d^2\,g}-\frac{B^2\,(b\,f-a\,g)^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,g}-$$
$$\frac{B^2\,(b\,f-a\,g)^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^2\,g}-\frac{B^2\,(d\,f-c\,g)^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2\,g}$$

Problem 243: Result valid but suboptimal antiderivative.

$$\int\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,dx$$

Optimal (type 4, 125 leaves, 6 steps):

$$\frac{2\,B\,(b\,c-a\,d)\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b\,d}+$$
$$\frac{(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b}+\frac{2\,B^2\,(b\,c-a\,d)\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,d}$$

Result (type 4, 246 leaves, 22 steps):

$$-\frac{a B^2 \operatorname{Log}[a+b x]^2}{b}+\frac{2 a B \operatorname{Log}[a+b x]\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b}+x\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2+\frac{2 B^2 c \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d}-\frac{2 B c\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{d}-\frac{B^2 c \operatorname{Log}[c+d x]^2}{d}+\frac{2 a B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b}+\frac{2 a B^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b}+\frac{2 B^2 c \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d}$$

Problem 244: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{f+g x} \, dx$$

Optimal (type 4, 277 leaves, 9 steps):

$$-\frac{\operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{g}+\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \operatorname{Log}\left[1-\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]}{g}-\frac{2 B\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{g}+\frac{2 B\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{PolyLog}\left[2, \frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]}{g}+\frac{2 B^2 \operatorname{PolyLog}\left[3, \frac{d (a+b x)}{b (c+d x)}\right]}{g}-\frac{2 B^2 \operatorname{PolyLog}\left[3, \frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]}{g}$$

Result (type 4, 1998 leaves, 41 steps):

$$-\frac{B^2 \operatorname{Log}[a+b x]^2 \operatorname{Log}[f+g x]}{g}-\frac{2 A B \operatorname{Log}\left[-\frac{g (a+b x)}{b f-a g}\right] \operatorname{Log}[f+g x]}{g}-\frac{B^2 \operatorname{Log}\left[\frac{1}{c+d x}\right]^2 \operatorname{Log}[f+g x]}{g}+\frac{1}{g} 2 B^2 \operatorname{Log}\left[-\frac{g (a+b x)}{b f-a g}\right]\left(\operatorname{Log}[a+b x]+\operatorname{Log}\left[\frac{1}{c+d x}\right]-\operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[f+g x]+\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \operatorname{Log}[f+g x]}{g}+\frac{2 B^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x] \operatorname{Log}[f+g x]}{g}-\frac{2 B^2 \operatorname{Log}\left[-\frac{g (a+b x)}{b f-a g}\right]\left(\operatorname{Log}\left[\frac{1}{c+d x}\right]+\operatorname{Log}[c+d x]\right) \operatorname{Log}[f+g x]}{g}+\frac{2 B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \operatorname{Log}[f+g x]}{g}+\frac{2 A B \operatorname{Log}\left[-\frac{g (c+d x)}{d f-c g}\right] \operatorname{Log}[f+g x]}{g}-\frac{1}{g} 2 B^2\left(\operatorname{Log}[a+b x]+\operatorname{Log}\left[\frac{1}{c+d x}\right]-\operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}\left[-\frac{g (c+d x)}{d f-c g}\right] \operatorname{Log}[f+g x]+\frac{B^2 \operatorname{Log}[a+b x]^2 \operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]}{g}+\frac{B^2 \operatorname{Log}\left[\frac{1}{c+d x}\right]^2 \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]}{g}+\frac{1}{g} B^2\left(\operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\operatorname{Log}\left[\frac{b f-a g}{b (f+g x)}\right]-\operatorname{Log}\left[\frac{(b f-a g) (c+d x)}{(b c-a d) (f+g x)}\right]\right) \operatorname{Log}\left[-\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]^2-$$

$$\frac{1}{g}B^2 \left(\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\right)\left(\text{Log}[a+b\,x]+\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)^2+\frac{1}{g}$$

$$B^2\left(\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]+\text{Log}\left[\frac{d\,f-c\,g}{d\,(f+g\,x)}\right]-\text{Log}\left[-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]\right)\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]^2-$$

$$\frac{1}{g}B^2\left(\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]-\text{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\right)\left(\text{Log}[c+d\,x]+\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\right)^2+$$

$$\frac{2\,B^2\left(\text{Log}[f+g\,x]-\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{g}+$$

$$\frac{2\,B^2\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]}{g}+$$

$$\frac{2\,B^2\left(\text{Log}[f+g\,x]-\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g}-$$

$$\frac{2\,B^2\,\text{Log}\left[\frac{1}{c+d\,x}\right]\text{PolyLog}\left[2,-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]}{g}-\frac{2\,B^2\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\text{PolyLog}\left[2,\frac{g\,(a+b\,x)}{b\,(f+g\,x)}\right]}{g}+$$

$$\frac{2\,B^2\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\text{PolyLog}\left[2,-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-$$

$$\frac{2\,B^2\,\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\text{PolyLog}\left[2,\frac{g\,(c+d\,x)}{d\,(f+g\,x)}\right]}{g}+\frac{2\,B^2\,\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-$$

$$\frac{2\,A\,B\,\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+\frac{2\,B^2\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}-$$

$$\frac{2\,B^2\left(\text{Log}\left[\frac{1}{c+d\,x}\right]+\text{Log}[c+d\,x]\right)\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+$$

$$\frac{2\,B^2\left(\text{Log}[c+d\,x]+\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\right)\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+\frac{2\,A\,B\,\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}-$$

$$\frac{2\,B^2\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}+$$

$$\frac{2\,B^2\left(\text{Log}[a+b\,x]+\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}-\frac{2\,B^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{g}-$$

$$\frac{2\,B^2\,\text{PolyLog}\left[3,-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]}{g}-\frac{2\,B^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g}-\frac{2\,B^2\,\text{PolyLog}\left[3,-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]}{g}-$$

$$\frac{2\,B^2\,\text{PolyLog}\left[3,\frac{g\,(a+b\,x)}{b\,(f+g\,x)}\right]}{g}+\frac{2\,B^2\,\text{PolyLog}\left[3,-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-\frac{2\,B^2\,\text{PolyLog}\left[3,\frac{g\,(c+d\,x)}{d\,(f+g\,x)}\right]}{g}+$$

$$\frac{2\,B^2\,\text{PolyLog}\left[3,\frac{(b\,f-a\,g)\,(c+d\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-\frac{2\,B^2\,\text{PolyLog}\left[3,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}-\frac{2\,B^2\,\text{PolyLog}\left[3,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}$$

Problem 245: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(f+g\,x)^2}\,dx$$

Optimal (type 4, 196 leaves, 4 steps):

$$\frac{(a+b\,x)\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,f-a\,g)\,(f+g\,x)}+\frac{2\,B\,(b\,c-a\,d)\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\mathrm{Log}\left[1-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}+\frac{2\,B^2\,(b\,c-a\,d)\,\mathrm{PolyLog}\left[2,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}$$

Result (type 4, 612 leaves, 32 steps):

$$-\frac{b\,B^2\,\mathrm{Log}[a+b\,x]^2}{g\,(b\,f-a\,g)}+\frac{2\,b\,B\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{g\,(b\,f-a\,g)}-\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{g\,(f+g\,x)}+$$
$$\frac{2\,B^2\,d\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}[c+d\,x]}{g\,(d\,f-c\,g)}-\frac{2\,B\,d\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\mathrm{Log}[c+d\,x]}{g\,(d\,f-c\,g)}-\frac{B^2\,d\,\mathrm{Log}[c+d\,x]^2}{g\,(d\,f-c\,g)}+$$
$$\frac{2\,b\,B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g\,(b\,f-a\,g)}-\frac{2\,B^2\,(b\,c-a\,d)\,\mathrm{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\mathrm{Log}[f+g\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)}+$$
$$\frac{2\,B\,(b\,c-a\,d)\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\mathrm{Log}[f+g\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)}+\frac{2\,B^2\,(b\,c-a\,d)\,\mathrm{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\mathrm{Log}[f+g\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)}+$$
$$\frac{2\,b\,B^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{g\,(b\,f-a\,g)}+\frac{2\,B^2\,d\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g\,(d\,f-c\,g)}-$$
$$\frac{2\,B^2\,(b\,c-a\,d)\,\mathrm{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}+\frac{2\,B^2\,(b\,c-a\,d)\,\mathrm{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}$$

Problem 246: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(f+g\,x)^3}\,dx$$

Optimal (type 4, 369 leaves, 9 steps):

$$\frac{B\,(b c-a d)\,g\,(a+b x)\,\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b f-a g)^2\,(d f-c g)\,(f+g x)}+$$
$$\frac{b^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 g\,(b f-a g)^2}-\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 g\,(f+g x)^2}+\frac{B^2\,(b c-a d)^2\,g\,\text{Log}\left[\frac{f+g x}{c+d x}\right]}{(b f-a g)^2\,(d f-c g)^2}+$$
$$\left(B\,(b c-a d)\,(2 b d f-b c g-a d g)\,\left(A+B \text{Log}\left[\frac{e\,(a+b x)}{c+d x}\right]\right)\,\text{Log}\left[1-\frac{(d f-c g)\,(a+b x)}{(b f-a g)\,(c+d x)}\right]\right)\Big/$$
$$\left((b f-a g)^2\,(d f-c g)^2\right)+\frac{B^2\,(b c-a d)\,(2 b d f-b c g-a d g)\,\text{PolyLog}\left[2,\frac{(d f-c g)\,(a+b x)}{(b f-a g)\,(c+d x)}\right]}{(b f-a g)^2\,(d f-c g)^2}$$

Result (type 4, 883 leaves, 36 steps):

$$\frac{b B^2\,(b c-a d)\,\text{Log}[a+b x]}{(b f-a g)^2\,(d f-c g)}-\frac{b^2 B^2\,\text{Log}[a+b x]^2}{2 g\,(b f-a g)^2}-\frac{B\,(b c-a d)\,\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b f-a g)\,(d f-c g)\,(f+g x)}+$$
$$\frac{b^2 B\,\text{Log}[a+b x]\,\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{g\,(b f-a g)^2}-\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 g\,(f+g x)^2}-\frac{B^2 d\,(b c-a d)\,\text{Log}[c+d x]}{(b f-a g)\,(d f-c g)^2}+$$
$$\frac{B^2 d^2\,\text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right]\,\text{Log}[c+d x]}{g\,(d f-c g)^2}-\frac{B d^2\,\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)\,\text{Log}[c+d x]}{g\,(d f-c g)^2}-$$
$$\frac{B^2 d^2\,\text{Log}[c+d x]^2}{2 g\,(d f-c g)^2}+\frac{b^2 B^2\,\text{Log}[a+b x]\,\text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{g\,(b f-a g)^2}+\frac{B^2\,(b c-a d)^2\,g\,\text{Log}[f+g x]}{(b f-a g)^2\,(d f-c g)^2}-$$
$$\frac{B^2\,(b c-a d)\,(2 b d f-b c g-a d g)\,\text{Log}\left[-\frac{g (a+b x)}{b f-a g}\right]\,\text{Log}[f+g x]}{(b f-a g)^2\,(d f-c g)^2}+$$
$$\frac{B\,(b c-a d)\,(2 b d f-b c g-a d g)\,\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)\,\text{Log}[f+g x]}{(b f-a g)^2\,(d f-c g)^2}+$$
$$\frac{B^2\,(b c-a d)\,(2 b d f-b c g-a d g)\,\text{Log}\left[-\frac{g (c+d x)}{d f-c g}\right]\,\text{Log}[f+g x]}{(b f-a g)^2\,(d f-c g)^2}+\frac{b^2 B^2\,\text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{g\,(b f-a g)^2}+$$
$$\frac{B^2 d^2\,\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{g\,(d f-c g)^2}-\frac{B^2\,(b c-a d)\,(2 b d f-b c g-a d g)\,\text{PolyLog}\left[2,\frac{b (f+g x)}{b f-a g}\right]}{(b f-a g)^2\,(d f-c g)^2}+$$
$$\frac{B^2\,(b c-a d)\,(2 b d f-b c g-a d g)\,\text{PolyLog}\left[2,\frac{d (f+g x)}{d f-c g}\right]}{(b f-a g)^2\,(d f-c g)^2}$$

Problem 247: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(f+g x)^4}\,dx$$

Optimal (type 4, 714 leaves, 12 steps):

$$\frac{B^2 (b c-a d)^2 g^2 (c+d x)}{3 (b f-a g)^2 (d f-c g)^3 (f+g x)}+$$
$$\frac{B^2 (b c-a d)^3 g^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 (b f-a g)^3 (d f-c g)^3}-\frac{B (b c-a d) g^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b f-a g) (d f-c g)^3 (f+g x)^2}+$$
$$\frac{2 B (b c-a d) g (3 b d f-b c g-2 a d g) (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b f-a g)^3 (d f-c g)^2 (f+g x)}+$$
$$\frac{b^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 g (b f-a g)^3}-\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 g (f+g x)^3}-\frac{B^2 (b c-a d)^3 g^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{3 (b f-a g)^3 (d f-c g)^3}+$$
$$\frac{2 B^2 (b c-a d)^2 g (3 b d f-b c g-2 a d g) \text{Log}\left[\frac{f+g x}{c+d x}\right]}{3 (b f-a g)^3 (d f-c g)^3}+$$
$$\Big(2 B (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right)$$
$$\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}\left[1-\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]\Big)\Big/\left(3 (b f-a g)^3 (d f-c g)^3\right)+$$
$$\Big(2 B^2 (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right)$$
$$\text{PolyLog}\left[2,\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]\Big)\Big/\left(3 (b f-a g)^3 (d f-c g)^3\right)$$

Result (type 4, 1356 leaves, 40 steps):

$$-\frac{B^2 (b c - a d)^2 g}{3 (b f - a g)^2 (d f - c g)^2 (f + g x)} + \frac{b^2 B^2 (b c - a d) \text{Log}[a + b x]}{3 (b f - a g)^3 (d f - c g)} +$$

$$\frac{2 b B^2 (b c - a d) (2 b d f - b c g - a d g) \text{Log}[a + b x]}{3 (b f - a g)^3 (d f - c g)^2} - \frac{b^3 B^2 \text{Log}[a + b x]^2}{3 g (b f - a g)^3} -$$

$$\frac{B (b c - a d) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b f - a g) (d f - c g) (f + g x)^2} - \frac{2 B (b c - a d) (2 b d f - b c g - a d g) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b f - a g)^2 (d f - c g)^2 (f + g x)} +$$

$$\frac{2 b^3 B \text{Log}[a + b x] \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 g (b f - a g)^3} - \frac{\left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 g (f + g x)^3} -$$

$$\frac{B^2 d^2 (b c - a d) \text{Log}[c + d x]}{3 (b f - a g) (d f - c g)^3} - \frac{2 B^2 d (b c - a d) (2 b d f - b c g - a d g) \text{Log}[c + d x]}{3 (b f - a g)^2 (d f - c g)^3} +$$

$$\frac{2 B^2 d^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c + d x]}{3 g (d f - c g)^3} - \frac{2 B d^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c + d x]}{3 g (d f - c g)^3} - \frac{B^2 d^3 \text{Log}[c + d x]^2}{3 g (d f - c g)^3} +$$

$$\frac{2 b^3 B^2 \text{Log}[a + b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 g (b f - a g)^3} + \frac{B^2 (b c - a d)^2 g (2 b d f - b c g - a d g) \text{Log}[f + g x]}{(b f - a g)^3 (d f - c g)^3} -$$

$$\left(2 B^2 (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right)\right.$$
$$\left.\text{Log}\left[-\frac{g (a + b x)}{b f - a g}\right] \text{Log}[f + g x]\right) \Big/ \left(3 (b f - a g)^3 (d f - c g)^3\right) +$$

$$\left(2 B (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right)\right.$$
$$\left.\left(A + B \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]\right) \text{Log}[f + g x]\right) \Big/ \left(3 (b f - a g)^3 (d f - c g)^3\right) +$$

$$\left(2 B^2 (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right)\right.$$
$$\left.\text{Log}\left[-\frac{g (c + d x)}{d f - c g}\right] \text{Log}[f + g x]\right) \Big/ \left(3 (b f - a g)^3 (d f - c g)^3\right) +$$

$$\frac{2 b^3 B^2 \text{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{3 g (b f - a g)^3} + \frac{2 B^2 d^3 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{3 g (d f - c g)^3} -$$

$$\left(2 B^2 (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right)\right.$$
$$\left.\text{PolyLog}\left[2, \frac{b (f + g x)}{b f - a g}\right]\right) \Big/ \left(3 (b f - a g)^3 (d f - c g)^3\right) +$$

$$\left(2 B^2 (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right)\right.$$
$$\left.\text{PolyLog}\left[2, \frac{d (f + g x)}{d f - c g}\right]\right) \Big/ \left(3 (b f - a g)^3 (d f - c g)^3\right)$$

Problem 248: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(f+g\,x)^5}\,dx$$

Optimal (type 4, 1159 leaves, 15 steps):

$$-\frac{B^2\,(b\,c-a\,d)^2\,g^3\,(c+d\,x)^2}{12\,(b\,f-a\,g)^2\,(d\,f-c\,g)^4\,(f+g\,x)^2}-\frac{B^2\,(b\,c-a\,d)^3\,g^3\,(c+d\,x)}{6\,(b\,f-a\,g)^3\,(d\,f-c\,g)^4\,(f+g\,x)}+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,(4\,b\,d\,f-b\,c\,g-3\,a\,d\,g)\,(c+d\,x)}{4\,(b\,f-a\,g)^3\,(d\,f-c\,g)^4\,(f+g\,x)}-\frac{B^2\,(b\,c-a\,d)^4\,g^3\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{6\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4}+$$
$$\frac{B^2\,(b\,c-a\,d)^3\,g^2\,(4\,b\,d\,f-b\,c\,g-3\,a\,d\,g)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{4\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4}+$$
$$\frac{B\,(b\,c-a\,d)\,g^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,(b\,f-a\,g)\,(d\,f-c\,g)^4\,(f+g\,x)^3}-$$
$$\frac{B\,(b\,c-a\,d)\,g^2\,(4\,b\,d\,f-b\,c\,g-3\,a\,d\,g)\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,(b\,f-a\,g)^2\,(d\,f-c\,g)^4\,(f+g\,x)^2}+$$
$$\Bigg(B\,(b\,c-a\,d)\,g\,\left(3\,a^2\,d^2\,g^2-2\,a\,b\,d\,g\,(4\,d\,f-c\,g)+b^2\,(6\,d^2\,f^2-4\,c\,d\,f\,g+c^2\,g^2)\right)$$
$$(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\Bigg)\Big/\left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^3\,(f+g\,x)\right)+$$
$$\frac{b^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,g\,(b\,f-a\,g)^4}-\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,g\,(f+g\,x)^4}+\frac{B^2\,(b\,c-a\,d)^4\,g^3\,\text{Log}\left[\frac{f+g\,x}{c+d\,x}\right]}{6\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4}-$$
$$\frac{B^2\,(b\,c-a\,d)^3\,g^2\,(4\,b\,d\,f-b\,c\,g-3\,a\,d\,g)\,\text{Log}\left[\frac{f+g\,x}{c+d\,x}\right]}{4\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4}+$$
$$\left(B^2\,(b\,c-a\,d)^2\,g\,\left(3\,a^2\,d^2\,g^2-2\,a\,b\,d\,g\,(4\,d\,f-c\,g)+b^2\,(6\,d^2\,f^2-4\,c\,d\,f\,g+c^2\,g^2)\right)\,\text{Log}\left[\frac{f+g\,x}{c+d\,x}\right]\right)\Big/$$
$$\left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right)-$$
$$\Bigg(B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(2\,a\,b\,d^2\,f\,g-a^2\,d^2\,g^2-b^2\,(2\,d^2\,f^2-2\,c\,d\,f\,g+c^2\,g^2)\right)$$
$$\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}\left[1-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\Bigg)\Big/\left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right)-$$
$$\Bigg(B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(2\,a\,b\,d^2\,f\,g-a^2\,d^2\,g^2-b^2\,(2\,d^2\,f^2-2\,c\,d\,f\,g+c^2\,g^2)\right)$$
$$\text{PolyLog}\left[2,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\Bigg)\Big/\left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right)$$

Result (type 4, 1881 leaves, 44 steps):

$$-\frac{B^2\,(b\,c-a\,d)^2\,g}{12\,(b\,f-a\,g)^2\,(d\,f-c\,g)^2\,(f+g\,x)^2}-\frac{5\,B^2\,(b\,c-a\,d)^2\,g\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)}{12\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3\,(f+g\,x)}+$$
$$\frac{b^3\,B^2\,(b\,c-a\,d)\,\text{Log}[a+b\,x]}{6\,(b\,f-a\,g)^4\,(d\,f-c\,g)}+\frac{b^2\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\text{Log}[a+b\,x]}{4\,(b\,f-a\,g)^4\,(d\,f-c\,g)^2}+$$
$$\left(b\,B^2\,(b\,c-a\,d)\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,\left(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2\right)\right)\,\text{Log}[a+b\,x]\right)\Big/$$
$$\left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^3\right)-\frac{b^4\,B^2\,\text{Log}[a+b\,x]^2}{4\,g\,(b\,f-a\,g)^4}-\frac{B\,(b\,c-a\,d)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,(b\,f-a\,g)\,(d\,f-c\,g)\,(f+g\,x)^3}-$$
$$\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,(b\,f-a\,g)^2\,(d\,f-c\,g)^2\,(f+g\,x)^2}-$$
$$\left(B\,(b\,c-a\,d)\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,\left(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2\right)\right)\right.$$
$$\left.\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\right)\Big/\left(2\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3\,(f+g\,x)\right)+$$
$$\frac{b^4\,B\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,g\,(b\,f-a\,g)^4}-\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,g\,(f+g\,x)^4}-\frac{B^2\,d^3\,(b\,c-a\,d)\,\text{Log}[c+d\,x]}{6\,(b\,f-a\,g)\,(d\,f-c\,g)^4}-$$
$$\frac{B^2\,d^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\text{Log}[c+d\,x]}{4\,(b\,f-a\,g)^2\,(d\,f-c\,g)^4}-$$
$$\left(B^2\,d\,(b\,c-a\,d)\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,\left(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2\right)\right)\,\text{Log}[c+d\,x]\right)\Big/$$
$$\left(2\,(b\,f-a\,g)^3\,(d\,f-c\,g)^4\right)+\frac{B^2\,d^4\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{2\,g\,(d\,f-c\,g)^4}-$$
$$\frac{B\,d^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{2\,g\,(d\,f-c\,g)^4}-\frac{B^2\,d^4\,\text{Log}[c+d\,x]^2}{4\,g\,(d\,f-c\,g)^4}+\frac{b^4\,B^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{2\,g\,(b\,f-a\,g)^4}+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)^2\,\text{Log}[f+g\,x]}{4\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4}+$$
$$\left(2\,B^2\,(b\,c-a\,d)^2\,g\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,\left(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2\right)\right)\,\text{Log}[f+g\,x]\right)\Big/$$
$$\left(3\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right)+$$
$$\left(B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(2\,a\,b\,d^2\,f\,g-a^2\,d^2\,g^2-b^2\,\left(2\,d^2\,f^2-2\,c\,d\,f\,g+c^2\,g^2\right)\right)\right.$$
$$\left.\text{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\,\text{Log}[f+g\,x]\right)\Big/\left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right)-$$
$$\left(B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(2\,a\,b\,d^2\,f\,g-a^2\,d^2\,g^2-b^2\,\left(2\,d^2\,f^2-2\,c\,d\,f\,g+c^2\,g^2\right)\right)\right.$$
$$\left.\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[f+g\,x]\right)\Big/\left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right)-$$
$$\left(B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(2\,a\,b\,d^2\,f\,g-a^2\,d^2\,g^2-b^2\,\left(2\,d^2\,f^2-2\,c\,d\,f\,g+c^2\,g^2\right)\right)\right.$$

$$\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\,\text{Log}[f+g\,x]\Big)\Big/\left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right)+$$

$$\frac{b^4\,B^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{2\,g\,(b\,f-a\,g)^4}+\frac{B^2\,d^4\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{2\,g\,(d\,f-c\,g)^4}+$$

$$\Big(B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(2\,a\,b\,d^2\,f\,g-a^2\,d^2\,g^2-b^2\,\left(2\,d^2\,f^2-2\,c\,d\,f\,g+c^2\,g^2\right)\right)$$

$$\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]\Big)\Big/\left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right)-$$

$$\Big(B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(2\,a\,b\,d^2\,f\,g-a^2\,d^2\,g^2-b^2\,\left(2\,d^2\,f^2-2\,c\,d\,f\,g+c^2\,g^2\right)\right)$$

$$\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]\Big)\Big/\left(2\,(b\,f-a\,g)^4\,(d\,f-c\,g)^4\right)$$

Problem 249: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Log}\left[\frac{1+x}{-1+x}\right]}{x^2}\,dx$$

Optimal (type 3, 35 leaves, 3 steps):

$$2\,\text{Log}\left[-\frac{x}{1-x}\right]-\frac{(1+x)\,\text{Log}\left[-\frac{1+x}{1-x}\right]}{x}$$

Result (type 3, 34 leaves, 4 steps):

$$2\,\text{Log}[x]-2\,\text{Log}[1+x]-\frac{(1-x)\,\text{Log}\left[-\frac{1+x}{1-x}\right]}{x}$$

Problem 250: Result valid but suboptimal antiderivative.

$$\int\frac{(f+g\,x)^2}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}\,dx$$

Optimal (type 8, 31 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(f+g\,x)^2}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},x\right]$$

Result (type 8, 88 leaves, 2 steps):

$$f^2\,\text{CannotIntegrate}\left[\frac{1}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},x\right]+$$

$$2\,f\,g\,\text{CannotIntegrate}\left[\frac{x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},x\right]+g^2\,\text{CannotIntegrate}\left[\frac{x^2}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},x\right]$$

Problem 251: Result valid but suboptimal antiderivative.

$$\int \frac{f+g\,x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}\,dx$$

Optimal (type 8, 29 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{f+g\,x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},\,x\right]$$

Result (type 8, 53 leaves, 2 steps):

$$f\,\text{CannotIntegrate}\left[\frac{1}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},\,x\right]+g\,\text{CannotIntegrate}\left[\frac{x}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},\,x\right]$$

Problem 252: Result valid but suboptimal antiderivative.

$$\int \frac{1}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}\,dx$$

Optimal (type 8, 23 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},\,x\right]$$

Result (type 8, 23 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]},\,x\right]$$

Problem 253: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}\,dx$$

Optimal (type 8, 31 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)},\,x\right]$$

Result (type 8, 31 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)},\,x\right]$$

Problem 254: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f+g\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}\,dx$$

Optimal (type 8, 31 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)},\,x\right]$$

Result (type 8, 31 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)},\,x\right]$$

Problem 255: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f+g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}\,dx$$

Optimal (type 8, 31 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)},\,x\right]$$

Result (type 8, 31 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)},\,x\right]$$

Problem 256: Result valid but suboptimal antiderivative.

$$\int \frac{(f+g\,x)^2}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}\,dx$$

Optimal (type 8, 31 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(f+g\,x)^2}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Result (type 8, 88 leaves, 2 steps):

$$f^2\,\text{CannotIntegrate}\left[\frac{1}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]+$$

$$2\,f\,g\,\text{CannotIntegrate}\left[\frac{x}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]+g^2\,\text{CannotIntegrate}\left[\frac{x^2}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Problem 257: Result valid but suboptimal antiderivative.

$$\int \frac{f+g\,x}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}\,dx$$

Optimal (type 8, 29 leaves, 0 steps):

$$\mathrm{Unintegrable}\left[\frac{f+g\,x}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Result (type 8, 53 leaves, 2 steps):

$$f\,\mathrm{CannotIntegrate}\left[\frac{1}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]+g\,\mathrm{CannotIntegrate}\left[\frac{x}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Problem 258: Result valid but suboptimal antiderivative.

$$\int \frac{1}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}\,dx$$

Optimal (type 8, 23 leaves, 0 steps):

$$\mathrm{Unintegrable}\left[\frac{1}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Result (type 8, 23 leaves, 0 steps):

$$\mathrm{CannotIntegrate}\left[\frac{1}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Problem 259: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f+g\,x)\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}\,dx$$

Optimal (type 8, 31 leaves, 0 steps):

$$\mathrm{Unintegrable}\left[\frac{1}{(f+g\,x)\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Result (type 8, 31 leaves, 0 steps):

$$\mathrm{CannotIntegrate}\left[\frac{1}{(f+g\,x)\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Problem 260: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f+g\,x)^2 \left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}\,dx$$

Optimal (type 8, 31 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)^2 \left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Result (type 8, 31 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)^2 \left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Problem 261: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f+g\,x)^3 \left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}\,dx$$

Optimal (type 8, 31 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)^3 \left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Result (type 8, 31 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)^3 \left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2},\,x\right]$$

Problem 262: Result valid but suboptimal antiderivative.

$$\int (f+g\,x)^4 \left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)dx$$

Optimal (type 3, 357 leaves, 3 steps):

$$\frac{1}{5\,b^4\,d^4}2\,B\,(b\,c-a\,d)\,g\,\left(a^3\,d^3\,g^3-a^2\,b\,d^2\,g^2\,(5\,d\,f-c\,g)+a\,b^2\,d\,g\,\left(10\,d^2\,f^2-5\,c\,d\,f\,g+c^2\,g^2\right)-b^3\,\left(10\,d^3\,f^3-10\,c\,d^2\,f^2\,g+5\,c^2\,d\,f\,g^2-c^3\,g^3\right)\right)x-\frac{1}{5\,b^3\,d^3}B\,(b\,c-a\,d)\,g^2\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(5\,d\,f-c\,g)+b^2\,\left(10\,d^2\,f^2-5\,c\,d\,f\,g+c^2\,g^2\right)\right)x^2-\frac{2\,B\,(b\,c-a\,d)\,g^3\,(5\,b\,d\,f-b\,c\,g-a\,d\,g)\,x^3}{15\,b^2\,d^2}-\frac{B\,(b\,c-a\,d)\,g^4\,x^4}{10\,b\,d}-\frac{2\,B\,(b\,f-a\,g)^5\,\text{Log}[a+b\,x]}{5\,b^5\,g}+\frac{(f+g\,x)^5\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{5\,g}+\frac{2\,B\,(d\,f-c\,g)^5\,\text{Log}[c+d\,x]}{5\,d^5\,g}$$

Result (type 3, 341 leaves, 4 steps):

$$\frac{1}{5 b^4 d^4} 2 B g \left(10 a b^3 d^4 f^3 - 10 a^2 b^2 d^4 f^2 g + 5 a^3 b d^4 f g^2 - a^4 d^4 g^3 - b^4 c \left(10 d^3 f^3 - 10 c d^2 f^2 g + 5 c^2 d f g^2 - c^3 g^3\right)\right) x - \frac{1}{5 b^3 d^3} B (b c - a d) g^2 \left(a^2 d^2 g^2 - a b d g (5 d f - c g) + b^2 \left(10 d^2 f^2 - 5 c d f g + c^2 g^2\right)\right) x^2 - \frac{2 B (b c - a d) g^3 (5 b d f - b c g - a d g) x^3}{15 b^2 d^2} - \frac{B (b c - a d) g^4 x^4}{10 b d} - \frac{2 B (b f - a g)^5 \operatorname{Log}[a + b x]}{5 b^5 g} + \frac{(f + g x)^5 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{5 g} + \frac{2 B (d f - c g)^5 \operatorname{Log}[c + d x]}{5 d^5 g}$$

Problem 263: Result optimal but 1 more steps used.

$$\int (f + g x)^3 \left(A + B \operatorname{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right]\right) dx$$

Optimal (type 3, 229 leaves, 3 steps):

$$-\frac{1}{2 b^3 d^3} B (b c - a d) g \left(a^2 d^2 g^2 - a b d g (4 d f - c g) + b^2 \left(6 d^2 f^2 - 4 c d f g + c^2 g^2\right)\right) x - \frac{B (b c - a d) g^2 (4 b d f - b c g - a d g) x^2}{4 b^2 d^2} - \frac{B (b c - a d) g^3 x^3}{6 b d} - \frac{B (b f - a g)^4 \operatorname{Log}[a + b x]}{2 b^4 g} + \frac{(f + g x)^4 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{4 g} + \frac{B (d f - c g)^4 \operatorname{Log}[c + d x]}{2 d^4 g}$$

Result (type 3, 229 leaves, 4 steps):

$$-\frac{1}{2 b^3 d^3} B (b c - a d) g \left(a^2 d^2 g^2 - a b d g (4 d f - c g) + b^2 \left(6 d^2 f^2 - 4 c d f g + c^2 g^2\right)\right) x - \frac{B (b c - a d) g^2 (4 b d f - b c g - a d g) x^2}{4 b^2 d^2} - \frac{B (b c - a d) g^3 x^3}{6 b d} - \frac{B (b f - a g)^4 \operatorname{Log}[a + b x]}{2 b^4 g} + \frac{(f + g x)^4 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{4 g} + \frac{B (d f - c g)^4 \operatorname{Log}[c + d x]}{2 d^4 g}$$

Problem 264: Result optimal but 1 more steps used.

$$\int (f + g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right]\right) dx$$

Optimal (type 3, 152 leaves, 3 steps):

$$-\frac{2 B (b c-a d) g (3 b d f-b c g-a d g) x}{3 b^2 d^2}-\frac{B (b c-a d) g^2 x^2}{3 b d}-\frac{2 B (b f-a g)^3 \text{Log}[a+b x]}{3 b^3 g}+\frac{(f+g x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 g}+\frac{2 B (d f-c g)^3 \text{Log}[c+d x]}{3 d^3 g}$$

Result (type 3, 152 leaves, 4 steps):

$$-\frac{2 B (b c-a d) g (3 b d f-b c g-a d g) x}{3 b^2 d^2}-\frac{B (b c-a d) g^2 x^2}{3 b d}-\frac{2 B (b f-a g)^3 \text{Log}[a+b x]}{3 b^3 g}+\frac{(f+g x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 g}+\frac{2 B (d f-c g)^3 \text{Log}[c+d x]}{3 d^3 g}$$

Problem 265: Result optimal but 1 more steps used.

$$\int (f+g x) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \, dx$$

Optimal (type 3, 104 leaves, 3 steps):

$$-\frac{B (b c-a d) g x}{b d}-\frac{B (b f-a g)^2 \text{Log}[a+b x]}{b^2 g}+\frac{(f+g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{2 g}+\frac{B (d f-c g)^2 \text{Log}[c+d x]}{d^2 g}$$

Result (type 3, 104 leaves, 4 steps):

$$-\frac{B (b c-a d) g x}{b d}-\frac{B (b f-a g)^2 \text{Log}[a+b x]}{b^2 g}+\frac{(f+g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{2 g}+\frac{B (d f-c g)^2 \text{Log}[c+d x]}{d^2 g}$$

Problem 267: Result optimal but 3 more steps used.

$$\int \frac{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{f+g x} \, dx$$

Optimal (type 4, 144 leaves, 7 steps):

$$-\frac{2 B \text{Log}\left[-\frac{g (a+b x)}{b f-a g}\right] \text{Log}[f+g x]}{g}+\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}[f+g x]}{g}+\frac{2 B \text{Log}\left[-\frac{g (c+d x)}{d f-c g}\right] \text{Log}[f+g x]}{g}-\frac{2 B \text{PolyLog}\left[2, \frac{b (f+g x)}{b f-a g}\right]}{g}+\frac{2 B \text{PolyLog}\left[2, \frac{d (f+g x)}{d f-c g}\right]}{g}$$

Result (type 4, 144 leaves, 10 steps):

$$-\frac{2\,B\,\text{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\,\text{Log}[f+g\,x]}{g}+\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\text{Log}[f+g\,x]}{g}+\frac{2\,B\,\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\,\text{Log}[f+g\,x]}{g}-\frac{2\,B\,\text{PolyLog}\left[2,\,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+\frac{2\,B\,\text{PolyLog}\left[2,\,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}$$

Problem 268: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]}{(f+g\,x)^2}\,dx$$

Optimal (type 3, 90 leaves, 3 steps):

$$\frac{(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{(b\,f-a\,g)\,(f+g\,x)}+\frac{2\,B\,(b\,c-a\,d)\,\text{Log}\left[\frac{f+g\,x}{c+d\,x}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}$$

Result (type 3, 117 leaves, 4 steps):

$$\frac{2\,b\,B\,\text{Log}[a+b\,x]}{g\,(b\,f-a\,g)}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]}{g\,(f+g\,x)}-\frac{2\,B\,d\,\text{Log}[c+d\,x]}{g\,(d\,f-c\,g)}+\frac{2\,B\,(b\,c-a\,d)\,\text{Log}[f+g\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)}$$

Problem 269: Result optimal but 1 more steps used.

$$\int\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]}{(f+g\,x)^3}\,dx$$

Optimal (type 3, 175 leaves, 3 steps):

$$-\frac{B\,(b\,c-a\,d)}{(b\,f-a\,g)\,(d\,f-c\,g)\,(f+g\,x)}+\frac{b^2\,B\,\text{Log}[a+b\,x]}{g\,(b\,f-a\,g)^2}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]}{2\,g\,(f+g\,x)^2}-\frac{B\,d^2\,\text{Log}[c+d\,x]}{g\,(d\,f-c\,g)^2}+\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\text{Log}[f+g\,x]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}$$

Result (type 3, 175 leaves, 4 steps):

$$-\frac{B\,(b\,c-a\,d)}{(b\,f-a\,g)\,(d\,f-c\,g)\,(f+g\,x)}+\frac{b^2\,B\,\text{Log}[a+b\,x]}{g\,(b\,f-a\,g)^2}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]}{2\,g\,(f+g\,x)^2}-\frac{B\,d^2\,\text{Log}[c+d\,x]}{g\,(d\,f-c\,g)^2}+\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\text{Log}[f+g\,x]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}$$

Problem 270: Result optimal but 1 more steps used.

$$\int \frac{A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{(f + g x)^4} \, dx$$

Optimal (type 3, 277 leaves, 3 steps):

$$-\frac{B (b c - a d)}{3 (b f - a g) (d f - c g) (f + g x)^2} - \frac{2 B (b c - a d) (2 b d f - b c g - a d g)}{3 (b f - a g)^2 (d f - c g)^2 (f + g x)} + \frac{2 b^3 B \operatorname{Log}[a + b x]}{3 g (b f - a g)^3} - \frac{A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{3 g (f + g x)^3} - \frac{2 B d^3 \operatorname{Log}[c + d x]}{3 g (d f - c g)^3} + \left(2 B (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right) \operatorname{Log}[f + g x]\right) \Big/ \left(3 (b f - a g)^3 (d f - c g)^3\right)$$

Result (type 3, 277 leaves, 4 steps):

$$-\frac{B (b c - a d)}{3 (b f - a g) (d f - c g) (f + g x)^2} - \frac{2 B (b c - a d) (2 b d f - b c g - a d g)}{3 (b f - a g)^2 (d f - c g)^2 (f + g x)} + \frac{2 b^3 B \operatorname{Log}[a + b x]}{3 g (b f - a g)^3} - \frac{A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{3 g (f + g x)^3} - \frac{2 B d^3 \operatorname{Log}[c + d x]}{3 g (d f - c g)^3} + \left(2 B (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right) \operatorname{Log}[f + g x]\right) \Big/ \left(3 (b f - a g)^3 (d f - c g)^3\right)$$

Problem 271: Result optimal but 1 more steps used.

$$\int \frac{A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{(f + g x)^5} \, dx$$

Optimal (type 3, 381 leaves, 3 steps):

$$-\frac{B (b c - a d)}{6 (b f - a g) (d f - c g) (f + g x)^3} - \frac{B (b c - a d) (2 b d f - b c g - a d g)}{4 (b f - a g)^2 (d f - c g)^2 (f + g x)^2} - \left(B (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right)\right) \Big/ \left(2 (b f - a g)^3 (d f - c g)^3 (f + g x)\right) + \frac{b^4 B \operatorname{Log}[a + b x]}{2 g (b f - a g)^4} - \frac{A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{4 g (f + g x)^4} - \frac{B d^4 \operatorname{Log}[c + d x]}{2 g (d f - c g)^4} - \left(B (b c - a d) (2 b d f - b c g - a d g) \left(2 a b d^2 f g - a^2 d^2 g^2 - b^2 (2 d^2 f^2 - 2 c d f g + c^2 g^2)\right) \operatorname{Log}[f + g x]\right) \Big/ \left(2 (b f - a g)^4 (d f - c g)^4\right)$$

Result (type 3, 381 leaves, 4 steps):

$$-\frac{B\,(b c-a d)}{6\,(b f-a g)\,(d f-c g)\,(f+g x)^3}-\frac{B\,(b c-a d)\,(2 b d f-b c g-a d g)}{4\,(b f-a g)^2\,(d f-c g)^2\,(f+g x)^2}-$$
$$\left(B\,(b c-a d)\,\left(a^2 d^2 g^2-a b d g\,(3 d f-c g)+b^2\,\left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right)\right)\Big/$$
$$\left(2\,(b f-a g)^3\,(d f-c g)^3\,(f+g x)\right)+\frac{b^4 B\,\text{Log}[a+b x]}{2 g\,(b f-a g)^4}-$$
$$\frac{A+B\,\text{Log}\left[\frac{e\,(a+b x)^2}{(c+d x)^2}\right]}{4 g\,(f+g x)^4}-\frac{B\,d^4\,\text{Log}[c+d x]}{2 g\,(d f-c g)^4}-\left(B\,(b c-a d)\,(2 b d f-b c g-a d g)\right.$$
$$\left.\left(2 a b d^2 f g-a^2 d^2 g^2-b^2\,\left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right)\,\text{Log}[f+g x]\right)\Big/\left(2\,(b f-a g)^4\,(d f-c g)^4\right)$$

Problem 272: Result valid but suboptimal antiderivative.

$$\int (f+g x)^3 \left(A+B\,\text{Log}\left[\frac{e\,(a+b x)^2}{(c+d x)^2}\right]\right)^2 dx$$

Optimal (type 4, 869 leaves, 15 steps) :

$$\frac{2 B^2 (b c-a d)^3 g^3 x}{3 b^3 d^3}+\frac{B^2 (b c-a d)^2 g^2 (4 b d f-3 b c g-a d g) x}{b^3 d^3}+$$
$$\frac{B^2 (b c-a d)^2 g^3 (c+d x)^2}{3 b^2 d^4}-\frac{1}{b^4 d^3}B (b c-a d) g$$
$$\left(a^2 d^2 g^2-2 a b d g (2 d f-c g)+b^2 (6 d^2 f^2-8 c d f g+3 c^2 g^2)\right) (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)-$$
$$\frac{1}{2 b^2 d^4}B (b c-a d) g^2 (4 b d f-3 b c g-a d g) (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)-$$
$$\frac{B (b c-a d) g^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d^4}-\frac{(b f-a g)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 b^4 g}+$$
$$\frac{(f+g x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 g}-\frac{1}{b^4 d^4}B (b c-a d) (2 b d f-b c g-a d g)$$
$$\left(2 a b d^2 f g-a^2 d^2 g^2-b^2 (2 d^2 f^2-2 c d f g+c^2 g^2)\right) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]+$$
$$\frac{2 B^2 (b c-a d)^4 g^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^4 d^4}+\frac{B^2 (b c-a d)^3 g^2 (4 b d f-3 b c g-a d g) \text{Log}\left[\frac{a+b x}{c+d x}\right]}{b^4 d^4}+$$
$$\frac{2 B^2 (b c-a d)^4 g^3 \text{Log}[c+d x]}{3 b^4 d^4}+\frac{B^2 (b c-a d)^3 g^2 (4 b d f-3 b c g-a d g) \text{Log}[c+d x]}{b^4 d^4}+\frac{1}{b^4 d^4}$$
$$2 B^2 (b c-a d)^2 g \left(a^2 d^2 g^2-2 a b d g (2 d f-c g)+b^2 (6 d^2 f^2-8 c d f g+3 c^2 g^2)\right) \text{Log}[c+d x]-$$
$$\frac{1}{b^4 d^4}2 B^2 (b c-a d) (2 b d f-b c g-a d g)$$
$$\left(2 a b d^2 f g-a^2 d^2 g^2-b^2 (2 d^2 f^2-2 c d f g+c^2 g^2)\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]$$

Result (type 4, 973 leaves, 33 steps) :

$$-\frac{2 B^2 (b c-a d)^2 (b c+a d) g^3 x}{3 b^3 d^3}+\frac{B^2 (b c-a d)^2 g^2 (4 b d f-b c g-a d g) x}{b^3 d^3}-$$
$$\frac{1}{b^3 d^3} A B (b c-a d) g \left(a^2 d^2 g^2-a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right) x+$$
$$\frac{B^2 (b c-a d)^2 g^3 x^2}{3 b^2 d^2}-\frac{2 a^3 B^2 (b c-a d) g^3 \text{Log}[a+b x]}{3 b^4 d}+$$
$$\frac{a^2 B^2 (b c-a d) g^2 (4 b d f-b c g-a d g) \text{Log}[a+b x]}{b^4 d^2}+\frac{B^2 (b f-a g)^4 \text{Log}[a+b x]^2}{b^4 g}-$$
$$\frac{1}{b^4 d^3} B^2 (b c-a d) g \left(a^2 d^2 g^2-a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right) (a+b x)$$
$$\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-\frac{B (b c-a d) g^2 (4 b d f-b c g-a d g) x^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{2 b^2 d^2}-$$
$$\frac{B (b c-a d) g^3 x^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d}-\frac{B (b f-a g)^4 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b^4 g}+$$
$$\frac{(f+g x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 g}+\frac{2 B^2 c^3 (b c-a d) g^3 \text{Log}[c+d x]}{3 b d^4}-$$
$$\frac{B^2 c^2 (b c-a d) g^2 (4 b d f-b c g-a d g) \text{Log}[c+d x]}{b^2 d^4}+\frac{1}{b^4 d^4}$$
$$2 B^2 (b c-a d)^2 g \left(a^2 d^2 g^2-a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right) \text{Log}[c+d x]-$$
$$\frac{2 B^2 (d f-c g)^4 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^4 g}+\frac{B (d f-c g)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}[c+d x]}{d^4 g}+$$
$$\frac{B^2 (d f-c g)^4 \text{Log}[c+d x]^2}{d^4 g}-\frac{2 B^2 (b f-a g)^4 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^4 g}-$$
$$\frac{2 B^2 (b f-a g)^4 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^4 g}-\frac{2 B^2 (d f-c g)^4 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^4 g}$$

Problem 273: Result valid but suboptimal antiderivative.

$$\int (f+g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 dx$$

Optimal (type 4, 542 leaves, 12 steps):

$$\frac{4 B^2 (b c - a d)^2 g^2 x}{3 b^2 d^2} - \frac{4 B (b c - a d) g (3 b d f - 2 b c g - a d g) (a + b x) \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b^3 d^2} - \frac{2 B (b c - a d) g^2 (c + d x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d^3} - \frac{(b f - a g)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{3 b^3 g} + \frac{(f + g x)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{3 g} + \frac{1}{3 b^3 d^3} 4 B (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right) \left(A + B \text{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right]\right) \text{Log}\left[\frac{b c - a d}{b (c + d x)}\right] + \frac{4 B^2 (b c - a d)^3 g^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^3 d^3} + \frac{4 B^2 (b c - a d)^3 g^2 \text{Log}[c + d x]}{3 b^3 d^3} + \frac{8 B^2 (b c - a d)^2 g (3 b d f - 2 b c g - a d g) \text{Log}[c + d x]}{3 b^3 d^3} + \frac{1}{3 b^3 d^3} 8 B^2 (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right) \text{PolyLog}\left[2, \frac{d (a + b x)}{b (c + d x)}\right]$$

Result (type 4, 659 leaves, 29 steps):

$$\frac{4 B^2 (b c - a d)^2 g^2 x}{3 b^2 d^2} - \frac{4 A B (b c - a d) g (3 b d f - b c g - a d g) x}{3 b^2 d^2} + \frac{4 a^2 B^2 (b c - a d) g^2 \text{Log}[a + b x]}{3 b^3 d} + \frac{4 B^2 (b f - a g)^3 \text{Log}[a + b x]^2}{3 b^3 g} - \frac{4 B^2 (b c - a d) g (3 b d f - b c g - a d g) (a + b x) \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{3 b^3 d^2} - \frac{2 B (b c - a d) g^2 x^2 \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d} - \frac{4 B (b f - a g)^3 \text{Log}[a + b x] \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b^3 g} + \frac{(f + g x)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{3 g} - \frac{4 B^2 c^2 (b c - a d) g^2 \text{Log}[c + d x]}{3 b d^3} + \frac{8 B^2 (b c - a d)^2 g (3 b d f - b c g - a d g) \text{Log}[c + d x]}{3 b^3 d^3} - \frac{8 B^2 (d f - c g)^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c + d x]}{3 d^3 g} + \frac{4 B (d f - c g)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}[c + d x]}{3 d^3 g} + \frac{4 B^2 (d f - c g)^3 \text{Log}[c + d x]^2}{3 d^3 g} - \frac{8 B^2 (b f - a g)^3 \text{Log}[a + b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b^3 g} - \frac{8 B^2 (b f - a g)^3 \text{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{3 b^3 g} - \frac{8 B^2 (d f - c g)^3 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{3 d^3 g}$$

Problem 274: Result valid but suboptimal antiderivative.

$$\int (f + g x) \left(A + B \text{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right]\right)^2 dx$$

Optimal (type 4, 281 leaves, 9 steps):

$$-\frac{2 B (b c-a d) g (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b^2 d}-\frac{(b f-a g)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{2 b^2 g}+\frac{(f+g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{2 g}+\frac{1}{b^2 d^2}2 B (b c-a d) (2 b d f-b c g-a d g) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]+\frac{4 B^2 (b c-a d)^2 g \text{Log}[c+d x]}{b^2 d^2}+\frac{4 B^2 (b c-a d) (2 b d f-b c g-a d g) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^2 d^2}$$

Result (type 4, 450 leaves, 25 steps):

$$-\frac{2 A B (b c-a d) g x}{b d}+\frac{2 B^2 (b f-a g)^2 \text{Log}[a+b x]^2}{b^2 g}-\frac{2 B^2 (b c-a d) g (a+b x) \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{b^2 d}-\frac{2 B (b f-a g)^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b^2 g}+\frac{(f+g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{2 g}+\frac{4 B^2 (b c-a d)^2 g \text{Log}[c+d x]}{b^2 d^2}-\frac{4 B^2 (d f-c g)^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^2 g}+\frac{2 B (d f-c g)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}[c+d x]}{d^2 g}+\frac{2 B^2 (d f-c g)^2 \text{Log}[c+d x]^2}{d^2 g}-\frac{4 B^2 (b f-a g)^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2 g}-\frac{4 B^2 (b f-a g)^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^2 g}-\frac{4 B^2 (d f-c g)^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2 g}$$

Problem 275: Result valid but suboptimal antiderivative.

$$\int \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 dx$$

Optimal (type 4, 129 leaves, 6 steps):

$$\frac{(a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{b}+\frac{4 B (b c-a d) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b d}+\frac{8 B^2 (b c-a d) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d}$$

Result (type 4, 252 leaves, 22 steps):

$$-\frac{4\,a\,B^2\,\mathrm{Log}[a+b\,x]^2}{b}+\frac{4\,a\,B\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{b}+x\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2+$$
$$\frac{8\,B^2\,c\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{d}-\frac{4\,B\,c\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\mathrm{Log}[c+d\,x]}{d}-\frac{4\,B^2\,c\,\mathrm{Log}[c+d\,x]^2}{d}+$$
$$\frac{8\,a\,B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b}+\frac{8\,a\,B^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b}+\frac{8\,B^2\,c\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d}$$

Problem 276: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{f+g\,x}\,dx$$

Optimal (type 4, 285 leaves, 9 steps):

$$-\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{g}+$$
$$\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2\,\mathrm{Log}\left[1-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{g}-\frac{4\,B\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{g}+$$
$$\frac{4\,B\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\mathrm{PolyLog}\left[2,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{g}+$$
$$\frac{8\,B^2\,\mathrm{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{g}-\frac{8\,B^2\,\mathrm{PolyLog}\left[3,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{g}$$

Result (type 4, 2126 leaves, 44 steps):

$$-\frac{4\,A\,B\,\mathrm{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\,\mathrm{Log}[f+g\,x]}{g}-\frac{B^2\,\mathrm{Log}\left[(a+b\,x)^2\right]^2\,\mathrm{Log}[f+g\,x]}{g}-\frac{B^2\,\mathrm{Log}\left[\frac{1}{(c+d\,x)^2}\right]^2\,\mathrm{Log}[f+g\,x]}{g}+$$
$$\frac{1}{g}4\,B^2\,\mathrm{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\,\left(\mathrm{Log}\left[(a+b\,x)^2\right]+\mathrm{Log}\left[\frac{1}{(c+d\,x)^2}\right]-\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\mathrm{Log}[f+g\,x]+$$
$$\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2\,\mathrm{Log}[f+g\,x]}{g}+\frac{8\,B^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]\,\mathrm{Log}[f+g\,x]}{g}-$$
$$\frac{4\,B^2\,\mathrm{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\,\left(\mathrm{Log}\left[\frac{1}{(c+d\,x)^2}\right]+2\,\mathrm{Log}[c+d\,x]\right)\,\mathrm{Log}[f+g\,x]}{g}+$$
$$\frac{8\,B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[f+g\,x]}{g}+\frac{4\,A\,B\,\mathrm{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\,\mathrm{Log}[f+g\,x]}{g}-$$
$$\frac{4\,B^2\,\left(2\,\mathrm{Log}[a+b\,x]-\mathrm{Log}\left[(a+b\,x)^2\right]\right)\,\mathrm{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\,\mathrm{Log}[f+g\,x]}{g}-\frac{1}{g}$$

$$4\,B^2\left(\text{Log}\left[(a+b\,x)^2\right]+\text{Log}\left[\frac{1}{(c+d\,x)^2}\right]-\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\text{Log}[f+g\,x]+$$

$$\frac{B^2\,\text{Log}\left[(a+b\,x)^2\right]^2\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+\frac{B^2\,\text{Log}\left[\frac{1}{(c+d\,x)^2}\right]^2\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}+\frac{1}{g}$$

$$4\,B^2\left(\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{Log}\left[\frac{b\,f-a\,g}{b\,(f+g\,x)}\right]-\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]\right)\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]^2-$$

$$\frac{1}{g}4\,B^2\left(\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\right)\left(\text{Log}[a+b\,x]+\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)^2+\frac{1}{g}4\,B^2$$

$$\left(\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]+\text{Log}\left[\frac{d\,f-c\,g}{d\,(f+g\,x)}\right]-\text{Log}\left[-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]\right)\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]^2-$$

$$\frac{1}{g}4\,B^2\left(\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]-\text{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\right)\left(\text{Log}[c+d\,x]+\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\right)^2+$$

$$\frac{8\,B^2\left(\text{Log}[f+g\,x]-\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{g}+$$

$$\frac{4\,B^2\,\text{Log}\left[(a+b\,x)^2\right]\text{PolyLog}\left[2,-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]}{g}+$$

$$\frac{8\,B^2\left(\text{Log}[f+g\,x]-\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g}-$$

$$\frac{4\,B^2\,\text{Log}\left[\frac{1}{(c+d\,x)^2}\right]\text{PolyLog}\left[2,-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]}{g}-\frac{8\,B^2\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\text{PolyLog}\left[2,\frac{g\,(a+b\,x)}{b\,(f+g\,x)}\right]}{g}+$$

$$\frac{8\,B^2\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\text{PolyLog}\left[2,-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-$$

$$\frac{8\,B^2\,\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\text{PolyLog}\left[2,\frac{g\,(c+d\,x)}{d\,(f+g\,x)}\right]}{g}+$$

$$\frac{8\,B^2\,\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-\frac{4\,A\,B\,\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+\frac{1}{g}$$

$$4\,B^2\left(\text{Log}\left[(a+b\,x)^2\right]+\text{Log}\left[\frac{1}{(c+d\,x)^2}\right]-\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-$$

$$\frac{4\,B^2\left(\text{Log}\left[\frac{1}{(c+d\,x)^2}\right]+2\,\text{Log}[c+d\,x]\right)\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+$$

$$\frac{8\,B^2\left(\text{Log}[c+d\,x]+\text{Log}\left[\frac{(b\,c-a\,d)\,(f+g\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\right)\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}+$$

$$\frac{4\,A\,B\,\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}-\frac{4\,B^2\left(2\,\text{Log}[a+b\,x]-\text{Log}\left[(a+b\,x)^2\right]\right)\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}-$$

$$\frac{1}{g}4\,B^2\left(\text{Log}\left[(a+b\,x)^2\right]+\text{Log}\left[\frac{1}{(c+d\,x)^2}\right]-\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+$$
$$\frac{8\,B^2\left(\text{Log}[a+b\,x]+\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}-\frac{8\,B^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{g}-$$
$$\frac{8\,B^2\,\text{PolyLog}\left[3,-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]}{g}-\frac{8\,B^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g}-\frac{8\,B^2\,\text{PolyLog}\left[3,-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]}{g}-$$
$$\frac{8\,B^2\,\text{PolyLog}\left[3,\frac{g\,(a+b\,x)}{b\,(f+g\,x)}\right]}{g}+\frac{8\,B^2\,\text{PolyLog}\left[3,-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-\frac{8\,B^2\,\text{PolyLog}\left[3,\frac{g\,(c+d\,x)}{d\,(f+g\,x)}\right]}{g}+$$
$$\frac{8\,B^2\,\text{PolyLog}\left[3,\frac{(b\,f-a\,g)\,(c+d\,x)}{(b\,c-a\,d)\,(f+g\,x)}\right]}{g}-\frac{8\,B^2\,\text{PolyLog}\left[3,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{g}-\frac{8\,B^2\,\text{PolyLog}\left[3,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{g}$$

Problem 277: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{(f+g\,x)^2}\,dx$$

Optimal (type 4, 200 leaves, 4 steps):

$$\frac{(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{(b\,f-a\,g)\,(f+g\,x)}+\frac{4\,B\,(b\,c-a\,d)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\text{Log}\left[1-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}+$$
$$\frac{8\,B^2\,(b\,c-a\,d)\,\text{PolyLog}\left[2,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}$$

Result (type 4, 620 leaves, 32 steps):

$$-\frac{4\,b\,B^2\,\text{Log}[a+b\,x]^2}{g\,(b\,f-a\,g)}+\frac{4\,b\,B\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{g\,(b\,f-a\,g)}-\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{g\,(f+g\,x)}+$$
$$\frac{8\,B^2\,d\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\text{Log}[c+d\,x]}{g\,(d\,f-c\,g)}-\frac{4\,B\,d\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\text{Log}[c+d\,x]}{g\,(d\,f-c\,g)}-\frac{4\,B^2\,d\,\text{Log}[c+d\,x]^2}{g\,(d\,f-c\,g)}+$$
$$\frac{8\,b\,B^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g\,(b\,f-a\,g)}-\frac{8\,B^2\,(b\,c-a\,d)\,\text{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\text{Log}[f+g\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)}+$$
$$\frac{4\,B\,(b\,c-a\,d)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\text{Log}[f+g\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)}+\frac{8\,B^2\,(b\,c-a\,d)\,\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\text{Log}[f+g\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)}+$$
$$\frac{8\,b\,B^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{g\,(b\,f-a\,g)}+\frac{8\,B^2\,d\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g\,(d\,f-c\,g)}-$$
$$\frac{8\,B^2\,(b\,c-a\,d)\,\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}+\frac{8\,B^2\,(b\,c-a\,d)\,\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{(b\,f-a\,g)\,(d\,f-c\,g)}$$

Problem 278: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{(f+g\,x)^3}\,dx$$

Optimal (type 4, 381 leaves, 9 steps):

$$\frac{2\,B\,(b\,c-a\,d)\,g\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{(b\,f-a\,g)^2\,(d\,f-c\,g)\,(f+g\,x)}+$$
$$\frac{b^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{2\,g\,(b\,f-a\,g)^2}-\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{2\,g\,(f+g\,x)^2}+\frac{4\,B^2\,(b\,c-a\,d)^2\,g\,\mathrm{Log}\left[\frac{f+g\,x}{c+d\,x}\right]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}+$$
$$\left(2\,B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\mathrm{Log}\left[1-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]\right)\Big/$$
$$\left((b\,f-a\,g)^2\,(d\,f-c\,g)^2\right)+\frac{4\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\mathrm{PolyLog}\left[2,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}$$

Result (type 4, 899 leaves, 36 steps):

$$\frac{4\,b\,B^2\,(b\,c-a\,d)\,\mathrm{Log}[a+b\,x]}{(b\,f-a\,g)^2\,(d\,f-c\,g)}-\frac{2\,b^2\,B^2\,\mathrm{Log}[a+b\,x]^2}{g\,(b\,f-a\,g)^2}-\frac{2\,B\,(b\,c-a\,d)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{(b\,f-a\,g)\,(d\,f-c\,g)\,(f+g\,x)}+$$

$$\frac{2\,b^2\,B\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{g\,(b\,f-a\,g)^2}-\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{2\,g\,(f+g\,x)^2}-\frac{4\,B^2\,d\,(b\,c-a\,d)\,\mathrm{Log}[c+d\,x]}{(b\,f-a\,g)\,(d\,f-c\,g)^2}+$$

$$\frac{4\,B^2\,d^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{g\,(d\,f-c\,g)^2}-\frac{2\,B\,d^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\mathrm{Log}[c+d\,x]}{g\,(d\,f-c\,g)^2}-$$

$$\frac{2\,B^2\,d^2\,\mathrm{Log}[c+d\,x]^2}{g\,(d\,f-c\,g)^2}+\frac{4\,b^2\,B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g\,(b\,f-a\,g)^2}+\frac{4\,B^2\,(b\,c-a\,d)^2\,g\,\mathrm{Log}[f+g\,x]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}-$$

$$\frac{4\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\mathrm{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\,\mathrm{Log}[f+g\,x]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}+$$

$$\left(2\,B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\,\mathrm{Log}[f+g\,x]\right)\Big/$$

$$\left((b\,f-a\,g)^2\,(d\,f-c\,g)^2\right)+\frac{4\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\mathrm{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\,\mathrm{Log}[f+g\,x]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}+$$

$$\frac{4\,b^2\,B^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{g\,(b\,f-a\,g)^2}+\frac{4\,B^2\,d^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{g\,(d\,f-c\,g)^2}-$$

$$\frac{4\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\mathrm{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}+$$

$$\frac{4\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,\mathrm{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}$$

Problem 279: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{(f+g\,x)^4}\,dx$$

Optimal (type 4, 724 leaves, 12 steps):

$$\frac{4 B^2 (b c - a d)^2 g^2 (c + d x)}{3 (b f - a g)^2 (d f - c g)^3 (f + g x)} - \frac{2 B (b c - a d) g^2 (c + d x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 (b f - a g) (d f - c g)^3 (f + g x)^2} +$$
$$\frac{4 B (b c - a d) g (3 b d f - b c g - 2 a d g) (a + b x) \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 (b f - a g)^3 (d f - c g)^2 (f + g x)} +$$
$$\frac{b^3 \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{3 g (b f - a g)^3} - \frac{\left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{3 g (f + g x)^3} + \frac{4 B^2 (b c - a d)^3 g^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 (b f - a g)^3 (d f - c g)^3} -$$
$$\frac{4 B^2 (b c - a d)^3 g^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{3 (b f - a g)^3 (d f - c g)^3} + \frac{8 B^2 (b c - a d)^2 g (3 b d f - b c g - 2 a d g) \text{Log}\left[\frac{f+g x}{c+d x}\right]}{3 (b f - a g)^3 (d f - c g)^3} +$$
$$\Big(4 B (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right)$$
$$\left(A + B \text{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right]\right) \text{Log}\left[1 - \frac{(d f - c g) (a + b x)}{(b f - a g) (c + d x)}\right]\Big) \Big/ \left(3 (b f - a g)^3 (d f - c g)^3\right) +$$
$$\Big(8 B^2 (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right)$$
$$\text{PolyLog}\left[2, \frac{(d f - c g) (a + b x)}{(b f - a g) (c + d x)}\right]\Big) \Big/ \left(3 (b f - a g)^3 (d f - c g)^3\right)$$

Result (type 4, 1369 leaves, 40 steps) :

$$-\frac{4 B^2 (b c - a d)^2 g}{3 (b f - a g)^2 (d f - c g)^2 (f + g x)} + \frac{4 b^2 B^2 (b c - a d) \text{Log}[a + b x]}{3 (b f - a g)^3 (d f - c g)} +$$
$$\frac{8 b B^2 (b c - a d) (2 b d f - b c g - a d g) \text{Log}[a + b x]}{3 (b f - a g)^3 (d f - c g)^2} - \frac{4 b^3 B^2 \text{Log}[a + b x]^2}{3 g (b f - a g)^3} -$$
$$\frac{2 B (b c - a d) \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 (b f - a g) (d f - c g) (f + g x)^2} - \frac{4 B (b c - a d) (2 b d f - b c g - a d g) \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 (b f - a g)^2 (d f - c g)^2 (f + g x)} +$$
$$\frac{4 b^3 B \text{Log}[a + b x] \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 g (b f - a g)^3} - \frac{\left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{3 g (f + g x)^3} -$$
$$\frac{4 B^2 d^2 (b c - a d) \text{Log}[c + d x]}{3 (b f - a g) (d f - c g)^3} - \frac{8 B^2 d (b c - a d) (2 b d f - b c g - a d g) \text{Log}[c + d x]}{3 (b f - a g)^2 (d f - c g)^3} +$$
$$\frac{8 B^2 d^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c + d x]}{3 g (d f - c g)^3} - \frac{4 B d^3 \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}[c + d x]}{3 g (d f - c g)^3} - \frac{4 B^2 d^3 \text{Log}[c + d x]^2}{3 g (d f - c g)^3} +$$
$$\frac{8 b^3 B^2 \text{Log}[a + b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 g (b f - a g)^3} + \frac{4 B^2 (b c - a d)^2 g (2 b d f - b c g - a d g) \text{Log}[f + g x]}{(b f - a g)^3 (d f - c g)^3} -$$
$$\Big(8 B^2 (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 (3 d^2 f^2 - 3 c d f g + c^2 g^2)\right)$$

$$\text{Log}\left[-\frac{g\,(a+b\,x)}{b\,f-a\,g}\right]\text{Log}[f+g\,x]\Bigg)\Bigg/\left(3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3\right)+$$

$$\Bigg(4\,B\,(b\,c-a\,d)\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,\left(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2\right)\right)$$

$$\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)\text{Log}[f+g\,x]\Bigg)\Bigg/\left(3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3\right)+$$

$$\Bigg(8\,B^2\,(b\,c-a\,d)\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,\left(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2\right)\right)$$

$$\text{Log}\left[-\frac{g\,(c+d\,x)}{d\,f-c\,g}\right]\text{Log}[f+g\,x]\Bigg)\Bigg/\left(3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3\right)+$$

$$\frac{8\,b^3\,B^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,g\,(b\,f-a\,g)^3}+\frac{8\,B^2\,d^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,g\,(d\,f-c\,g)^3}-$$

$$\Bigg(8\,B^2\,(b\,c-a\,d)\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,\left(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2\right)\right)$$

$$\text{PolyLog}\left[2,\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]\Bigg)\Bigg/\left(3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3\right)+$$

$$\Bigg(8\,B^2\,(b\,c-a\,d)\,\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,\left(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2\right)\right)$$

$$\text{PolyLog}\left[2,\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]\Bigg)\Bigg/\left(3\,(b\,f-a\,g)^3\,(d\,f-c\,g)^3\right)$$

Problem 280: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{(f+g\,x)^5}\,dx$$

Optimal (type 4, 1154 leaves, 15 steps):

$$-\frac{B^2 (b c-a d)^2 g^3 (c+d x)^2}{3 (b f-a g)^2 (d f-c g)^4 (f+g x)^2}-\frac{2 B^2 (b c-a d)^3 g^3 (c+d x)}{3 (b f-a g)^3 (d f-c g)^4 (f+g x)}+$$

$$\frac{B^2 (b c-a d)^2 g^2 (4 b d f-b c g-3 a d g) (c+d x)}{(b f-a g)^3 (d f-c g)^4 (f+g x)}+\frac{B (b c-a d) g^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 (b f-a g) (d f-c g)^4 (f+g x)^3}-$$

$$\left(B (b c-a d) g^2 (4 b d f-b c g-3 a d g) (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)\right)\Big/$$
$$\left(2 (b f-a g)^2 (d f-c g)^4 (f+g x)^2\right)+$$

$$\left(B (b c-a d) g \left(3 a^2 d^2 g^2-2 a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right)\right.$$
$$\left.(a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)\right)\Big/\left((b f-a g)^4 (d f-c g)^3 (f+g x)\right)+$$

$$\frac{b^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 g (b f-a g)^4}-\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 g (f+g x)^4}-\frac{2 B^2 (b c-a d)^4 g^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 (b f-a g)^4 (d f-c g)^4}+$$

$$\frac{B^2 (b c-a d)^3 g^2 (4 b d f-b c g-3 a d g) \text{Log}\left[\frac{a+b x}{c+d x}\right]}{(b f-a g)^4 (d f-c g)^4}+$$

$$\frac{2 B^2 (b c-a d)^4 g^3 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{3 (b f-a g)^4 (d f-c g)^4}-\frac{B^2 (b c-a d)^3 g^2 (4 b d f-b c g-3 a d g) \text{Log}\left[\frac{f+g x}{c+d x}\right]}{(b f-a g)^4 (d f-c g)^4}+$$

$$\left(2 B^2 (b c-a d)^2 g \left(3 a^2 d^2 g^2-2 a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right) \text{Log}\left[\frac{f+g x}{c+d x}\right]\right)\Big/$$
$$\left((b f-a g)^4 (d f-c g)^4\right)-$$

$$\left(B (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right)\right.$$
$$\left.\left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}\left[1-\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]\right)\Big/\left((b f-a g)^4 (d f-c g)^4\right)-$$

$$\left(2 B^2 (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right)\right.$$
$$\left.\text{PolyLog}\left[2,\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]\right)\Big/\left((b f-a g)^4 (d f-c g)^4\right)$$

Result (type 4, 1854 leaves, 44 steps):

$$-\frac{B^2 (b c-a d)^2 g}{3 (b f-a g)^2 (d f-c g)^2 (f+g x)^2}-\frac{5 B^2 (b c-a d)^2 g (2 b d f-b c g-a d g)}{3 (b f-a g)^3 (d f-c g)^3 (f+g x)}+$$

$$\frac{2 b^3 B^2 (b c-a d) \text{Log}[a+b x]}{3 (b f-a g)^4 (d f-c g)}+\frac{b^2 B^2 (b c-a d) (2 b d f-b c g-a d g) \text{Log}[a+b x]}{(b f-a g)^4 (d f-c g)^2}+$$

$$\left(2 b B^2 (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) \text{Log}[a+b x]\right)\Big/$$

$$\left(\left(b f-a g\right)^4 \left(d f-c g\right)^3\right)-\frac{b^4 B^2 \operatorname{Log}[a+b x]^2}{g \left(b f-a g\right)^4}-\frac{B \left(b c-a d\right) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 \left(b f-a g\right) \left(d f-c g\right) \left(f+g x\right)^3}-$$

$$\frac{B \left(b c-a d\right) \left(2 b d f-b c g-a d g\right) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{2 \left(b f-a g\right)^2 \left(d f-c g\right)^2 \left(f+g x\right)^2}-$$

$$\left(B \left(b c-a d\right) \left(a^2 d^2 g^2-a b d g \left(3 d f-c g\right)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right)\right.$$

$$\left.\left(A+B \operatorname{Log}\left[\frac{e \left(a+b x\right)^2}{\left(c+d x\right)^2}\right]\right)\right)\Big/\left(\left(b f-a g\right)^3 \left(d f-c g\right)^3 \left(f+g x\right)\right)+$$

$$\frac{b^4 B \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{g \left(b f-a g\right)^4}-\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 g \left(f+g x\right)^4}-\frac{2 B^2 d^3 \left(b c-a d\right) \operatorname{Log}[c+d x]}{3 \left(b f-a g\right) \left(d f-c g\right)^4}-$$

$$\frac{B^2 d^2 \left(b c-a d\right) \left(2 b d f-b c g-a d g\right) \operatorname{Log}[c+d x]}{\left(b f-a g\right)^2 \left(d f-c g\right)^4}-$$

$$\left(2 B^2 d \left(b c-a d\right) \left(a^2 d^2 g^2-a b d g \left(3 d f-c g\right)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) \operatorname{Log}[c+d x]\right)\Big/$$

$$\left(\left(b f-a g\right)^3 \left(d f-c g\right)^4\right)+\frac{2 B^2 d^4 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{g \left(d f-c g\right)^4}-$$

$$\frac{B d^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \operatorname{Log}[c+d x]}{g \left(d f-c g\right)^4}-\frac{B^2 d^4 \operatorname{Log}[c+d x]^2}{g \left(d f-c g\right)^4}+$$

$$\frac{2 b^4 B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{g \left(b f-a g\right)^4}+\frac{B^2 \left(b c-a d\right)^2 g \left(2 b d f-b c g-a d g\right)^2 \operatorname{Log}[f+g x]}{\left(b f-a g\right)^4 \left(d f-c g\right)^4}+$$

$$\left(8 B^2 \left(b c-a d\right)^2 g \left(a^2 d^2 g^2-a b d g \left(3 d f-c g\right)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) \operatorname{Log}[f+g x]\right)\Big/$$

$$\left(3 \left(b f-a g\right)^4 \left(d f-c g\right)^4\right)+$$

$$\left(2 B^2 \left(b c-a d\right) \left(2 b d f-b c g-a d g\right) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right)\right.$$

$$\left.\operatorname{Log}\left[-\frac{g \left(a+b x\right)}{b f-a g}\right] \operatorname{Log}[f+g x]\right)\Big/\left(\left(b f-a g\right)^4 \left(d f-c g\right)^4\right)-$$

$$\left(B \left(b c-a d\right) \left(2 b d f-b c g-a d g\right) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right)\right.$$

$$\left.\left(A+B \operatorname{Log}\left[\frac{e \left(a+b x\right)^2}{\left(c+d x\right)^2}\right]\right) \operatorname{Log}[f+g x]\right)\Big/\left(\left(b f-a g\right)^4 \left(d f-c g\right)^4\right)-$$

$$\left(2 B^2 \left(b c-a d\right) \left(2 b d f-b c g-a d g\right) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right)\right.$$

$$\left.\operatorname{Log}\left[-\frac{g \left(c+d x\right)}{d f-c g}\right] \operatorname{Log}[f+g x]\right)\Big/\left(\left(b f-a g\right)^4 \left(d f-c g\right)^4\right)+$$

$$\frac{2 b^4 B^2 \text{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{g (b f-a g)^4} + \frac{2 B^2 d^4 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{g (d f-c g)^4} +$$

$$\left(2 B^2 (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right) \text{PolyLog}\left[2, \frac{b (f+g x)}{b f-a g}\right]\right) \Big/ \left((b f-a g)^4 (d f-c g)^4\right) -$$

$$\left(2 B^2 (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right) \text{PolyLog}\left[2, \frac{d (f+g x)}{d f-c g}\right]\right) \Big/ \left((b f-a g)^4 (d f-c g)^4\right)$$

Problem 281: Result valid but suboptimal antiderivative.

$$\int \frac{(f+g x)^2}{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]} \, dx$$

Optimal (type 8, 33 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(f+g x)^2}{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}, x\right]$$

Result (type 8, 94 leaves, 2 steps):

$$f^2 \text{CannotIntegrate}\left[\frac{1}{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}, x\right] +$$

$$2 f g \text{CannotIntegrate}\left[\frac{x}{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}, x\right] + g^2 \text{CannotIntegrate}\left[\frac{x^2}{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}, x\right]$$

Problem 282: Result valid but suboptimal antiderivative.

$$\int \frac{f+g x}{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]} \, dx$$

Optimal (type 8, 31 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{f+g x}{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}, x\right]$$

Result (type 8, 57 leaves, 2 steps):

$$f \text{CannotIntegrate}\left[\frac{1}{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}, x\right] + g \text{CannotIntegrate}\left[\frac{x}{A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}, x\right]$$

Problem 283: Result valid but suboptimal antiderivative.

$$\int \frac{1}{A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]} \, dx$$

Optimal (type 8, 25 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}, x\right]$$

Result (type 8, 25 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}, x\right]$$

Problem 284: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f + g x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)} \, dx$$

Optimal (type 8, 33 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f + g x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}, x\right]$$

Result (type 8, 33 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f + g x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}, x\right]$$

Problem 285: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f + g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)} \, dx$$

Optimal (type 8, 33 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f + g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}, x\right]$$

Result (type 8, 33 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f + g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}, x\right]$$

Problem 286: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f+g\,x)^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}\,dx$$

Optimal (type 8, 33 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)},\,x\right]$$

Result (type 8, 33 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)},\,x\right]$$

Problem 287: Result valid but suboptimal antiderivative.

$$\int \frac{(f+g\,x)^2}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}\,dx$$

Optimal (type 8, 33 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(f+g\,x)^2}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Result (type 8, 94 leaves, 2 steps):

$$f^2\,\text{CannotIntegrate}\left[\frac{1}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]+$$
$$2\,f\,g\,\text{CannotIntegrate}\left[\frac{x}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]+g^2\,\text{CannotIntegrate}\left[\frac{x^2}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Problem 288: Result valid but suboptimal antiderivative.

$$\int \frac{f+g\,x}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}\,dx$$

Optimal (type 8, 31 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{f+g\,x}{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Result (type 8, 57 leaves, 2 steps):

$$\text{f CannotIntegrate}\left[\frac{1}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]+\text{g CannotIntegrate}\left[\frac{x}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Problem 289: Result valid but suboptimal antiderivative.

$$\int \frac{1}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}\,dx$$

Optimal (type 8, 25 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Result (type 8, 25 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Problem 290: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}\,dx$$

Optimal (type 8, 33 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Result (type 8, 33 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Problem 291: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f+g\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}\,dx$$

Optimal (type 8, 33 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Result (type 8, 33 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Problem 292: Result valid but suboptimal antiderivative.

$$\int \frac{1}{(f+g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}\,dx$$

Optimal (type 8, 33 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{(f+g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Result (type 8, 33 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2},\,x\right]$$

Problem 293: Result valid but suboptimal antiderivative.

$$\int (g+h\,x)^4\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)dx$$

Optimal (type 3, 365 leaves, 3 steps):

$$\frac{1}{5\,b^4\,d^4}B\,(b\,c-a\,d)\,h\,\left(a^3\,d^3\,h^3-a^2\,b\,d^2\,h^2\,(5\,d\,g-c\,h)+a\,b^2\,d\,h\,\left(10\,d^2\,g^2-5\,c\,d\,g\,h+c^2\,h^2\right)-b^3\,\left(10\,d^3\,g^3-10\,c\,d^2\,g^2\,h+5\,c^2\,d\,g\,h^2-c^3\,h^3\right)\right)\,n\,x-\frac{1}{10\,b^3\,d^3}B\,(b\,c-a\,d)\,h^2\,\left(a^2\,d^2\,h^2-a\,b\,d\,h\,(5\,d\,g-c\,h)+b^2\,\left(10\,d^2\,g^2-5\,c\,d\,g\,h+c^2\,h^2\right)\right)\,n\,x^2-\frac{B\,(b\,c-a\,d)\,h^3\,(5\,b\,d\,g-b\,c\,h-a\,d\,h)\,n\,x^3}{15\,b^2\,d^2}-\frac{B\,(b\,c-a\,d)\,h^4\,n\,x^4}{20\,b\,d}-\frac{B\,(b\,g-a\,h)^5\,n\,\text{Log}[a+b\,x]}{5\,b^5\,h}+\frac{B\,(d\,g-c\,h)^5\,n\,\text{Log}[c+d\,x]}{5\,d^5\,h}+\frac{(g+h\,x)^5\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}{5\,h}$$

Result (type 3, 377 leaves, 5 steps):

$$\frac{1}{5 b^4 d^4} B (b c - a d) h \left(a^3 d^3 h^3 - a^2 b d^2 h^2 (5 d g - c h) + a b^2 d h \left(10 d^2 g^2 - 5 c d g h + c^2 h^2\right) - b^3 \left(10 d^3 g^3 - 10 c d^2 g^2 h + 5 c^2 d g h^2 - c^3 h^3\right)\right) n x - \frac{1}{10 b^3 d^3} B (b c - a d) h^2 \left(a^2 d^2 h^2 - a b d h (5 d g - c h) + b^2 \left(10 d^2 g^2 - 5 c d g h + c^2 h^2\right)\right) n x^2 - \frac{B (b c - a d) h^3 (5 b d g - b c h - a d h) n x^3}{15 b^2 d^2} - \frac{B (b c - a d) h^4 n x^4}{20 b d} + \frac{A (g + h x)^5}{5 h} - \frac{B (b g - a h)^5 n \operatorname{Log}[a + b x]}{5 b^5 h} + \frac{B (d g - c h)^5 n \operatorname{Log}[c + d x]}{5 d^5 h} + \frac{B (g + h x)^5 \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{5 h}$$

Problem 294: Result valid but suboptimal antiderivative.

$$\int (g + h x)^3 \left(A + B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]\right) dx$$

Optimal (type 3, 236 leaves, 3 steps):

$$-\frac{1}{4 b^3 d^3} B (b c - a d) h \left(a^2 d^2 h^2 - a b d h (4 d g - c h) + b^2 \left(6 d^2 g^2 - 4 c d g h + c^2 h^2\right)\right) n x - \frac{B (b c - a d) h^2 (4 b d g - b c h - a d h) n x^2}{8 b^2 d^2} - \frac{B (b c - a d) h^3 n x^3}{12 b d} - \frac{B (b g - a h)^4 n \operatorname{Log}[a + b x]}{4 b^4 h} + \frac{B (d g - c h)^4 n \operatorname{Log}[c + d x]}{4 d^4 h} + \frac{(g + h x)^4 \left(A + B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]\right)}{4 h}$$

Result (type 3, 248 leaves, 5 steps):

$$-\frac{1}{4 b^3 d^3} B (b c - a d) h \left(a^2 d^2 h^2 - a b d h (4 d g - c h) + b^2 \left(6 d^2 g^2 - 4 c d g h + c^2 h^2\right)\right) n x - \frac{B (b c - a d) h^2 (4 b d g - b c h - a d h) n x^2}{8 b^2 d^2} - \frac{B (b c - a d) h^3 n x^3}{12 b d} + \frac{A (g + h x)^4}{4 h} - \frac{B (b g - a h)^4 n \operatorname{Log}[a + b x]}{4 b^4 h} + \frac{B (d g - c h)^4 n \operatorname{Log}[c + d x]}{4 d^4 h} + \frac{B (g + h x)^4 \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{4 h}$$

Problem 295: Result valid but suboptimal antiderivative.

$$\int (g + h x)^2 \left(A + B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]\right) dx$$

Optimal (type 3, 158 leaves, 3 steps):

$$-\frac{B (b c - a d) h (3 b d g - b c h - a d h) n x}{3 b^2 d^2} - \frac{B (b c - a d) h^2 n x^2}{6 b d} - \frac{B (b g - a h)^3 n \operatorname{Log}[a + b x]}{3 b^3 h} + \frac{B (d g - c h)^3 n \operatorname{Log}[c + d x]}{3 d^3 h} + \frac{(g + h x)^3 \left(A + B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]\right)}{3 h}$$

Result (type 3, 170 leaves, 5 steps):

$$-\frac{B\,(b\,c-a\,d)\,h\,(3\,b\,d\,g-b\,c\,h-a\,d\,h)\,n\,x}{3\,b^2\,d^2}-\frac{B\,(b\,c-a\,d)\,h^2\,n\,x^2}{6\,b\,d}+\frac{A\,(g+h\,x)^3}{3\,h}-\frac{B\,(b\,g-a\,h)^3\,n\,\mathrm{Log}[a+b\,x]}{3\,b^3\,h}+\frac{B\,(d\,g-c\,h)^3\,n\,\mathrm{Log}[c+d\,x]}{3\,d^3\,h}+\frac{B\,(g+h\,x)^3\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{3\,h}$$

Problem 296: Result valid but suboptimal antiderivative.

$$\int (g+h\,x)\,\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,dx$$

Optimal (type 3, 116 leaves, 3 steps):

$$-\frac{B\,(b\,c-a\,d)\,h\,n\,x}{2\,b\,d}-\frac{B\,(b\,g-a\,h)^2\,n\,\mathrm{Log}[a+b\,x]}{2\,b^2\,h}+\frac{B\,(d\,g-c\,h)^2\,n\,\mathrm{Log}[c+d\,x]}{2\,d^2\,h}+\frac{(g+h\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}{2\,h}$$

Result (type 3, 128 leaves, 5 steps):

$$-\frac{B\,(b\,c-a\,d)\,h\,n\,x}{2\,b\,d}+\frac{A\,(g+h\,x)^2}{2\,h}-\frac{B\,(b\,g-a\,h)^2\,n\,\mathrm{Log}[a+b\,x]}{2\,b^2\,h}+\frac{B\,(d\,g-c\,h)^2\,n\,\mathrm{Log}[c+d\,x]}{2\,d^2\,h}+\frac{B\,(g+h\,x)^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{2\,h}$$

Problem 298: Result valid but suboptimal antiderivative.

$$\int \frac{A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{g+h\,x}\,dx$$

Optimal (type 4, 148 leaves, 7 steps):

$$-\frac{B\,n\,\mathrm{Log}\left[-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]\,\mathrm{Log}[g+h\,x]}{h}+\frac{B\,n\,\mathrm{Log}\left[-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]\,\mathrm{Log}[g+h\,x]}{h}+\frac{\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\mathrm{Log}[g+h\,x]}{h}-\frac{B\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h}+\frac{B\,n\,\mathrm{PolyLog}\left[2,\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h}$$

Result (type 4, 156 leaves, 9 steps):

$$\frac{A\,\mathrm{Log}[g+h\,x]}{h}-\frac{B\,n\,\mathrm{Log}\left[-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]\,\mathrm{Log}[g+h\,x]}{h}+\frac{B\,n\,\mathrm{Log}\left[-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]\,\mathrm{Log}[g+h\,x]}{h}+\frac{B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{Log}[g+h\,x]}{h}-\frac{B\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h}+\frac{B\,n\,\mathrm{PolyLog}\left[2,\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h}$$

Problem 299: Result valid but suboptimal antiderivative.

$$\int \frac{A + B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{(g + h x)^2} \, dx$$

Optimal (type 3, 120 leaves, 3 steps):

$$\frac{b B n \operatorname{Log}[a + b x]}{h (b g - a h)} - \frac{B d n \operatorname{Log}[c + d x]}{h (d g - c h)} - \frac{A + B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{h (g + h x)} + \frac{B (b c - a d) n \operatorname{Log}[g + h x]}{(b g - a h) (d g - c h)}$$

Result (type 3, 132 leaves, 6 steps):

$$-\frac{A}{h (g + h x)} - \frac{B (b c - a d) n \operatorname{Log}[c + d x]}{(b g - a h) (d g - c h)} + \frac{B (a + b x) \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{(b g - a h) (g + h x)} + \frac{B (b c - a d) n \operatorname{Log}[g + h x]}{(b g - a h) (d g - c h)}$$

Problem 300: Result valid but suboptimal antiderivative.

$$\int \frac{A + B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{(g + h x)^3} \, dx$$

Optimal (type 3, 191 leaves, 3 steps):

$$-\frac{B (b c - a d) n}{2 (b g - a h) (d g - c h) (g + h x)} + \frac{b^2 B n \operatorname{Log}[a + b x]}{2 h (b g - a h)^2} - \frac{B d^2 n \operatorname{Log}[c + d x]}{2 h (d g - c h)^2} - \frac{A + B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{2 h (g + h x)^2} + \frac{B (b c - a d) (2 b d g - b c h - a d h) n \operatorname{Log}[g + h x]}{2 (b g - a h)^2 (d g - c h)^2}$$

Result (type 3, 203 leaves, 5 steps):

$$-\frac{A}{2 h (g + h x)^2} - \frac{B (b c - a d) n}{2 (b g - a h) (d g - c h) (g + h x)} + \frac{b^2 B n \operatorname{Log}[a + b x]}{2 h (b g - a h)^2} - \frac{B d^2 n \operatorname{Log}[c + d x]}{2 h (d g - c h)^2} - \frac{B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{2 h (g + h x)^2} + \frac{B (b c - a d) (2 b d g - b c h - a d h) n \operatorname{Log}[g + h x]}{2 (b g - a h)^2 (d g - c h)^2}$$

Problem 301: Result valid but suboptimal antiderivative.

$$\int \frac{A + B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{(g + h x)^4} \, dx$$

Optimal (type 3, 284 leaves, 3 steps):

$$-\frac{B\,(b\,c-a\,d)\,n}{6\,(b\,g-a\,h)\,(d\,g-c\,h)\,(g+h\,x)^2}-\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n}{3\,(b\,g-a\,h)^2\,(d\,g-c\,h)^2\,(g+h\,x)}+\frac{b^3\,B\,n\,\text{Log}[a+b\,x]}{3\,h\,(b\,g-a\,h)^3}-\frac{B\,d^3\,n\,\text{Log}[c+d\,x]}{3\,h\,(d\,g-c\,h)^3}-\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{3\,h\,(g+h\,x)^3}+\left(B\,(b\,c-a\,d)\,\left(a^2\,d^2\,h^2-a\,b\,d\,h\,(3\,d\,g-c\,h)+b^2\,(3\,d^2\,g^2-3\,c\,d\,g\,h+c^2\,h^2)\right)\,n\,\text{Log}[g+h\,x]\right)\Big/\left(3\,(b\,g-a\,h)^3\,(d\,g-c\,h)^3\right)$$

Result (type 3, 296 leaves, 5 steps):

$$-\frac{A}{3\,h\,(g+h\,x)^3}-\frac{B\,(b\,c-a\,d)\,n}{6\,(b\,g-a\,h)\,(d\,g-c\,h)\,(g+h\,x)^2}-\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n}{3\,(b\,g-a\,h)^2\,(d\,g-c\,h)^2\,(g+h\,x)}+\frac{b^3\,B\,n\,\text{Log}[a+b\,x]}{3\,h\,(b\,g-a\,h)^3}-\frac{B\,d^3\,n\,\text{Log}[c+d\,x]}{3\,h\,(d\,g-c\,h)^3}-\frac{B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{3\,h\,(g+h\,x)^3}+\left(B\,(b\,c-a\,d)\,\left(a^2\,d^2\,h^2-a\,b\,d\,h\,(3\,d\,g-c\,h)+b^2\,(3\,d^2\,g^2-3\,c\,d\,g\,h+c^2\,h^2)\right)\,n\,\text{Log}[g+h\,x]\right)\Big/\left(3\,(b\,g-a\,h)^3\,(d\,g-c\,h)^3\right)$$

Problem 302: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{(g+h\,x)^5}\,dx$$

Optimal (type 3, 389 leaves, 3 steps):

$$-\frac{B\,(b\,c-a\,d)\,n}{12\,(b\,g-a\,h)\,(d\,g-c\,h)\,(g+h\,x)^3}-\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n}{8\,(b\,g-a\,h)^2\,(d\,g-c\,h)^2\,(g+h\,x)^2}-\left(B\,(b\,c-a\,d)\,\left(a^2\,d^2\,h^2-a\,b\,d\,h\,(3\,d\,g-c\,h)+b^2\,(3\,d^2\,g^2-3\,c\,d\,g\,h+c^2\,h^2)\right)\,n\right)\Big/\left(4\,(b\,g-a\,h)^3\,(d\,g-c\,h)^3\,(g+h\,x)\right)+\frac{b^4\,B\,n\,\text{Log}[a+b\,x]}{4\,h\,(b\,g-a\,h)^4}-\frac{B\,d^4\,n\,\text{Log}[c+d\,x]}{4\,h\,(d\,g-c\,h)^4}-\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{4\,h\,(g+h\,x)^4}-\left(B\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,\left(2\,a\,b\,d^2\,g\,h-a^2\,d^2\,h^2-b^2\,(2\,d^2\,g^2-2\,c\,d\,g\,h+c^2\,h^2)\right)\,n\,\text{Log}[g+h\,x]\right)\Big/\left(4\,(b\,g-a\,h)^4\,(d\,g-c\,h)^4\right)$$

Result (type 3, 401 leaves, 5 steps):

$$-\frac{A}{4 h (g+h x)^4}-\frac{B (b c-a d) n}{12 (b g-a h) (d g-c h) (g+h x)^3}-\frac{B (b c-a d) (2 b d g-b c h-a d h) n}{8 (b g-a h)^2 (d g-c h)^2 (g+h x)^2}-$$
$$\left(B (b c-a d) \left(a^2 d^2 h^2-a b d h (3 d g-c h)+b^2 \left(3 d^2 g^2-3 c d g h+c^2 h^2\right)\right) n\right) \Big/$$
$$\left(4 (b g-a h)^3 (d g-c h)^3 (g+h x)\right)+\frac{b^4 B n \operatorname{Log}[a+b x]}{4 h (b g-a h)^4}-\frac{B d^4 n \operatorname{Log}[c+d x]}{4 h (d g-c h)^4}-$$
$$\frac{B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{4 h (g+h x)^4}-\left(B (b c-a d) (2 b d g-b c h-a d h)\right.$$
$$\left.\left(2 a b d^2 g h-a^2 d^2 h^2-b^2 \left(2 d^2 g^2-2 c d g h+c^2 h^2\right)\right) n \operatorname{Log}[g+h x]\right) \Big/ \left(4 (b g-a h)^4 (d g-c h)^4\right)$$

Problem 303: Result valid but suboptimal antiderivative.

$$\int (g+h x)^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 dx$$

Optimal (type 4, 570 leaves, 13 steps):

$$\frac{B^2 (b c-a d)^2 h^2 n^2 x}{3 b^2 d^2}+\frac{B^2 (b c-a d)^3 h^2 n^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^3 d^3}+\frac{B^2 (b c-a d)^3 h^2 n^2 \operatorname{Log}[c+d x]}{3 b^3 d^3}+$$
$$\frac{2 B^2 (b c-a d)^2 h (3 b d g-2 b c h-a d h) n^2 \operatorname{Log}[c+d x]}{3 b^3 d^3}-\frac{1}{3 b^3 d^2}$$
$$2 B (b c-a d) h (3 b d g-2 b c h-a d h) n (a+b x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)-$$
$$\frac{B (b c-a d) h^2 n (c+d x)^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{3 b d^3}+\frac{1}{3 b^3 d^3}$$
$$2 B (b c-a d) \left(a^2 d^2 h^2-a b d h (3 d g-c h)+b^2 \left(3 d^2 g^2-3 c d g h+c^2 h^2\right)\right) n \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]$$
$$\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)-\frac{(b g-a h)^3 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{3 b^3 h}+$$
$$\frac{(g+h x)^3 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{3 h}+\frac{1}{3 b^3 d^3} 2 B^2 (b c-a d)$$
$$\left(a^2 d^2 h^2-a b d h (3 d g-c h)+b^2 \left(3 d^2 g^2-3 c d g h+c^2 h^2\right)\right) n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]$$

Result (type 4, 697 leaves, 23 steps):

$$-\frac{2\,A\,B\,(b\,c-a\,d)\,h\,(3\,b\,d\,g-b\,c\,h-a\,d\,h)\,n\,x}{3\,b^2\,d^2}+\frac{B^2\,(b\,c-a\,d)^2\,h^2\,n^2\,x}{3\,b^2\,d^2}-$$
$$\frac{A\,B\,(b\,c-a\,d)\,h^2\,n\,x^2}{3\,b\,d}+\frac{A^2\,(g+h\,x)^3}{3\,h}-\frac{2\,A\,B\,(b\,g-a\,h)^3\,n\,\text{Log}[a+b\,x]}{3\,b^3\,h}+$$
$$\frac{a^2\,B^2\,(b\,c-a\,d)\,h^2\,n^2\,\text{Log}[a+b\,x]}{3\,b^3\,d}+\frac{2\,A\,B\,(d\,g-c\,h)^3\,n\,\text{Log}[c+d\,x]}{3\,d^3\,h}-$$
$$\frac{B^2\,c^2\,(b\,c-a\,d)\,h^2\,n^2\,\text{Log}[c+d\,x]}{3\,b\,d^3}+\frac{2\,B^2\,(b\,c-a\,d)^2\,h\,(3\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^2\,\text{Log}[c+d\,x]}{3\,b^3\,d^3}-$$
$$\frac{B^2\,(b\,c-a\,d)\,h^2\,n\,x^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{3\,b\,d}-\frac{1}{3\,b^3\,d^2}$$
$$2\,B^2\,(b\,c-a\,d)\,h\,(3\,b\,d\,g-b\,c\,h-a\,d\,h)\,n\,(a+b\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$
$$\frac{2\,A\,B\,(g+h\,x)^3\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{3\,h}+$$
$$\frac{2\,B^2\,(b\,g-a\,h)^3\,n\,\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{3\,b^3\,h}-$$
$$\frac{2\,B^2\,(d\,g-c\,h)^3\,n\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{3\,d^3\,h}+$$
$$\frac{B^2\,(g+h\,x)^3\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{3\,h}-$$
$$\frac{2\,B^2\,(d\,g-c\,h)^3\,n^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{3\,d^3\,h}-\frac{2\,B^2\,(b\,g-a\,h)^3\,n^2\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{3\,b^3\,h}$$

Problem 304: Result valid but suboptimal antiderivative.

$$\int (g+h\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,dx$$

Optimal (type 4, 294 leaves, 10 steps):

$$\frac{B^2\,(b\,c-a\,d)^2\,h\,n^2\,\text{Log}[c+d\,x]}{b^2\,d^2}-\frac{B\,(b\,c-a\,d)\,h\,n\,(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}{b^2\,d}+\frac{1}{b^2\,d^2}$$
$$B\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)-$$
$$\frac{(b\,g-a\,h)^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{2\,b^2\,h}+\frac{(g+h\,x)^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{2\,h}+$$
$$\frac{B^2\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^2\,d^2}$$

Result (type 4, 449 leaves, 20 steps):

$$-\frac{A B (b c-a d) h n x}{b d}+\frac{A^2 (g+h x)^2}{2 h}-\frac{A B (b g-a h)^2 n \text{Log}[a+b x]}{b^2 h}+\frac{A B (d g-c h)^2 n \text{Log}[c+d x]}{d^2 h}+\frac{B^2 (b c-a d)^2 h n^2 \text{Log}[c+d x]}{b^2 d^2}-\frac{B^2 (b c-a d) h n (a+b x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2 d}+\frac{A B (g+h x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{h}+\frac{B^2 (b g-a h)^2 n \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2 h}-\frac{B^2 (d g-c h)^2 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^2 h}+\frac{B^2 (g+h x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 h}-\frac{B^2 (d g-c h)^2 n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 h}-\frac{B^2 (b g-a h)^2 n^2 \text{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{b^2 h}$$

Problem 305: Result valid but suboptimal antiderivative.

$$\int \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 dx$$

Optimal (type 4, 137 leaves, 6 steps):

$$\frac{2 B (b c-a d) n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b d}+\frac{(a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{b}+\frac{2 B^2 (b c-a d) n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d}$$

Result (type 4, 195 leaves, 10 steps):

$$A^2 x-\frac{2 A B (b c-a d) n \text{Log}[c+d x]}{b d}+\frac{2 A B (a+b x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}+\frac{2 B^2 (b c-a d) n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d}+\frac{B^2 (a+b x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b}+\frac{2 B^2 (b c-a d) n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d}$$

Problem 306: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{g+h x} dx$$

Optimal (type 4, 301 leaves, 10 steps):

$$-\frac{\text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{h}+\frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 \text{Log}\left[1-\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{h}-\frac{2 B n \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{h}+\frac{2 B n \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{h}+\frac{2 B^2 n^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{h}-\frac{2 B^2 n^2 \text{PolyLog}\left[3,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{h}$$

Result (type 4, 473 leaves, 16 steps):

$$-\frac{B^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{h}+\frac{A^2 \text{Log}[g+h x]}{h}-\frac{2 A B n \text{Log}\left[-\frac{h (a+b x)}{b g-a h}\right] \text{Log}[g+h x]}{h}+\frac{2 A B n \text{Log}\left[-\frac{h (c+d x)}{d g-c h}\right] \text{Log}[g+h x]}{h}+\frac{2 A B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \text{Log}[g+h x]}{h}+\frac{B^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2 \text{Log}\left[\frac{(b c-a d) (g+h x)}{(b g-a h) (c+d x)}\right]}{h}-\frac{2 A B n \text{PolyLog}\left[2,\frac{b (g+h x)}{b g-a h}\right]}{h}+\frac{2 A B n \text{PolyLog}\left[2,\frac{d (g+h x)}{d g-c h}\right]}{h}-\frac{2 B^2 n \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \text{PolyLog}\left[2,1-\frac{b c-a d}{b (c+d x)}\right]}{h}+\frac{2 B^2 n \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \text{PolyLog}\left[2,1-\frac{(b c-a d) (g+h x)}{(b g-a h) (c+d x)}\right]}{h}+\frac{2 B^2 n^2 \text{PolyLog}\left[3,1-\frac{b c-a d}{b (c+d x)}\right]}{h}-\frac{2 B^2 n^2 \text{PolyLog}\left[3,1-\frac{(b c-a d) (g+h x)}{(b g-a h) (c+d x)}\right]}{h}$$

Problem 307: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(g+h x)^2} \, dx$$

Optimal (type 4, 208 leaves, 5 steps):

$$\frac{(a+b x)\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(b g-a h)(g+h x)}+$$
$$\left(2 B (b c-a d) n \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \operatorname{Log}\left[1-\frac{(d g-c h)(a+b x)}{(b g-a h)(c+d x)}\right]\right) \Big/$$
$$((b g-a h)(d g-c h))+\frac{2 B^2 (b c-a d) n^2 \operatorname{PolyLog}\left[2, \frac{(d g-c h)(a+b x)}{(b g-a h)(c+d x)}\right]}{(b g-a h)(d g-c h)}$$

Result (type 4, 343 leaves, 10 steps):

$$-\frac{A^2}{h (g+h x)}-\frac{2 A B (b c-a d) n \operatorname{Log}[c+d x]}{(b g-a h)(d g-c h)}+\frac{2 A B (a+b x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{(b g-a h)(g+h x)}+$$
$$\frac{B^2 (a+b x) \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{(b g-a h)(g+h x)}+\frac{2 A B (b c-a d) n \operatorname{Log}[g+h x]}{(b g-a h)(d g-c h)}+$$
$$\frac{2 B^2 (b c-a d) n \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \operatorname{Log}\left[\frac{(b c-a d)(g+h x)}{(b g-a h)(c+d x)}\right]}{(b g-a h)(d g-c h)}+$$
$$\frac{2 B^2 (b c-a d) n^2 \operatorname{PolyLog}\left[2, 1-\frac{(b c-a d)(g+h x)}{(b g-a h)(c+d x)}\right]}{(b g-a h)(d g-c h)}$$

Problem 308: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(g+h x)^3} \, dx$$

Optimal (type 4, 393 leaves, 10 steps):

$$\frac{B (b c-a d) h n (a+b x)\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{(b g-a h)^2 (d g-c h)(g+h x)}+$$
$$\frac{b^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 h (b g-a h)^2}-$$
$$\frac{\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 h (g+h x)^2}+\frac{B^2 (b c-a d)^2 h n^2 \operatorname{Log}\left[\frac{g+h x}{c+d x}\right]}{(b g-a h)^2 (d g-c h)^2}+$$
$$\left(B (b c-a d)(2 b d g-b c h-a d h) n \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)\right.$$
$$\left.\operatorname{Log}\left[1-\frac{(d g-c h)(a+b x)}{(b g-a h)(c+d x)}\right]\right) \Big/ \left((b g-a h)^2 (d g-c h)^2\right)+$$
$$\frac{B^2 (b c-a d)(2 b d g-b c h-a d h) n^2 \operatorname{PolyLog}\left[2, \frac{(d g-c h)(a+b x)}{(b g-a h)(c+d x)}\right]}{(b g-a h)^2 (d g-c h)^2}$$

Result (type 4, 968 leaves, 29 steps):

$$-\frac{A^2}{2 h (g+h x)^2}-\frac{A B (b c-a d) n}{(b g-a h) (d g-c h) (g+h x)}+$$
$$\frac{A b^2 B n \text{Log}[a+b x]}{h (b g-a h)^2}-\frac{A B d^2 n \text{Log}[c+d x]}{h (d g-c h)^2}-\frac{B^2 (b c-a d)^2 h n^2 \text{Log}[c+d x]}{(b g-a h)^2 (d g-c h)^2}-$$
$$\frac{A B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{h (g+h x)^2}+\frac{B^2 (b c-a d) h n (a+b x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{(b g-a h)^2 (d g-c h) (g+h x)}-$$
$$\frac{b^2 B^2 n \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{h (b g-a h)^2}+$$
$$\frac{B^2 d^2 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{h (d g-c h)^2}-\frac{B^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 h (g+h x)^2}+$$
$$\frac{A B (b c-a d) (2 b d g-b c h-a d h) n \text{Log}[g+h x]}{(b g-a h)^2 (d g-c h)^2}+\frac{B^2 (b c-a d)^2 h n^2 \text{Log}[g+h x]}{(b g-a h)^2 (d g-c h)^2}-$$
$$\frac{B^2 (b c-a d) (2 b d g-b c h-a d h) n^2 \text{Log}\left[-\frac{h (a+b x)}{b g-a h}\right] \text{Log}[g+h x]}{(b g-a h)^2 (d g-c h)^2}+$$
$$\frac{B^2 (b c-a d) (2 b d g-b c h-a d h) n^2 \text{Log}\left[-\frac{h (c+d x)}{d g-c h}\right] \text{Log}[g+h x]}{(b g-a h)^2 (d g-c h)^2}+$$
$$\left(B^2 (b c-a d) (2 b d g-b c h-a d h) n \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \text{Log}[g+h x]\right)\Big/$$
$$\left((b g-a h)^2 (d g-c h)^2\right)+\frac{B^2 d^2 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{h (d g-c h)^2}-$$
$$\frac{B^2 (b c-a d) (2 b d g-b c h-a d h) n^2 \text{PolyLog}\left[2,\frac{b (g+h x)}{b g-a h}\right]}{(b g-a h)^2 (d g-c h)^2}+$$
$$\frac{B^2 (b c-a d) (2 b d g-b c h-a d h) n^2 \text{PolyLog}\left[2,\frac{d (g+h x)}{d g-c h}\right]}{(b g-a h)^2 (d g-c h)^2}+\frac{b^2 B^2 n^2 \text{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{h (b g-a h)^2}$$

Problem 309: Result valid but suboptimal antiderivative.

$$\int (g+h x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3 dx$$

Optimal (type 4, 875 leaves, 19 steps):

$$-\frac{B^3 (b c-a d)^3 h^2 n^3 \text{Log}[c+d x]}{b^3 d^3}+\frac{B^2 (b c-a d)^2 h^2 n^2 (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b^3 d^2}-\frac{1}{b^3 d^3}$$

$$2 B^2 (b c-a d)^2 h (3 b d g-2 b c h-a d h) n^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)-$$

$$\frac{1}{b^3 d^2} B (b c-a d) h (3 b d g-2 b c h-a d h) n (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2-$$

$$\frac{B (b c-a d) h^2 n (c+d x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 b d^3}+\frac{1}{b^3 d^3}$$

$$B (b c-a d) \left(a^2 d^2 h^2-a b d h (3 d g-c h)+b^2 \left(3 d^2 g^2-3 c d g h+c^2 h^2\right)\right)$$

$$n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2-$$

$$\frac{(b g-a h)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{3 b^3 h}+\frac{(g+h x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{3 h}-$$

$$\frac{1}{b^3 d^3} B^2 (b c-a d)^3 h^2 n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]-$$

$$\frac{2 B^3 (b c-a d)^2 h (3 b d g-2 b c h-a d h) n^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^3 d^3}+\frac{1}{b^3 d^3}$$

$$2 B^2 (b c-a d) \left(a^2 d^2 h^2-a b d h (3 d g-c h)+b^2 \left(3 d^2 g^2-3 c d g h+c^2 h^2\right)\right)$$

$$n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]+$$

$$\frac{B^3 (b c-a d)^3 h^2 n^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 d^3}-\frac{1}{b^3 d^3} 2 B^3 (b c-a d)$$

$$\left(a^2 d^2 h^2-a b d h (3 d g-c h)+b^2 \left(3 d^2 g^2-3 c d g h+c^2 h^2\right)\right) n^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]$$

Result (type 4, 1640 leaves, 53 steps):

$$-\frac{A^2 B (b c-a d) h (3 b d g-b c h-a d h) n x}{b^2 d^2}+\frac{A B^2 (b c-a d)^2 h^2 n^2 x}{b^2 d^2}-$$

$$\frac{A^2 B (b c-a d) h^2 n x^2}{2 b d}+\frac{A^3 (g+h x)^3}{3 h}-\frac{A^2 B (b g-a h)^3 n \text{Log}[a+b x]}{b^3 h}+$$

$$\frac{a^2 A B^2 (b c-a d) h^2 n^2 \text{Log}[a+b x]}{b^3 d}+\frac{A^2 B (d g-c h)^3 n \text{Log}[c+d x]}{d^3 h}-$$

$$\frac{A B^2 c^2 (b c-a d) h^2 n^2 \text{Log}[c+d x]}{b d^3}+\frac{2 A B^2 (b c-a d)^2 h (3 b d g-b c h-a d h) n^2 \text{Log}[c+d x]}{b^3 d^3}-$$

$$\frac{B^3 (b c-a d)^3 h^2 n^3 \text{Log}[c+d x]}{b^3 d^3}-\frac{A B^2 (b c-a d) h^2 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d}-$$

$$\frac{1}{b^3 d^2} 2 A B^2 (b c-a d) h (3 b d g-b c h-a d h) n (a+b x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+$$

$$\frac{B^3 (b c - a d)^2 h^2 n^2 (a + b x) \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{b^3 d^2} +$$

$$\frac{A^2 B (g + h x)^3 \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{h} +$$

$$\frac{2 A B^2 (b g - a h)^3 n \text{Log}\left[-\frac{b c - a d}{d (a+b x)}\right] \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{b^3 h} -$$

$$\frac{a^2 B^3 (b c - a d) h^2 n^2 \text{Log}\left[-\frac{b c - a d}{d (a+b x)}\right] \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{b^3 d} -$$

$$\frac{2 A B^2 (d g - c h)^3 n \text{Log}\left[\frac{b c - a d}{b (c+d x)}\right] \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{d^3 h} +$$

$$\frac{B^3 c^2 (b c - a d) h^2 n^2 \text{Log}\left[\frac{b c - a d}{b (c+d x)}\right] \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{b d^3} - \frac{1}{b^3 d^3}$$

$$2 B^3 (b c - a d)^2 h (3 b d g - b c h - a d h) n^2 \text{Log}\left[\frac{b c - a d}{b (c + d x)}\right] \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right] -$$

$$\frac{B^3 (b c - a d) h^2 n x^2 \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]^2}{2 b d} - \frac{1}{b^3 d^2}$$

$$B^3 (b c - a d) h (3 b d g - b c h - a d h) n (a + b x) \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]^2 +$$

$$\frac{A B^2 (g + h x)^3 \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]^2}{h} +$$

$$\frac{B^3 (b g - a h)^3 n \text{Log}\left[-\frac{b c - a d}{d (a+b x)}\right] \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]^2}{b^3 h} -$$

$$\frac{B^3 (d g - c h)^3 n \text{Log}\left[\frac{b c - a d}{b (c+d x)}\right] \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]^2}{d^3 h} +$$

$$\frac{B^3 (g + h x)^3 \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]^3}{3 h} - \frac{2 A B^2 (d g - c h)^3 n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^3 h} +$$

$$\frac{B^3 c^2 (b c - a d) h^2 n^3 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^3} -$$

$$\frac{2 B^3 (b c - a d)^2 h (3 b d g - b c h - a d h) n^3 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b^3 d^3} -$$

$$\frac{2 A B^2 (b g - a h)^3 n^2 \text{PolyLog}\left[2, 1 + \frac{b c - a d}{d (a+b x)}\right]}{b^3 h} + \frac{a^2 B^3 (b c - a d) h^2 n^3 \text{PolyLog}\left[2, 1 + \frac{b c - a d}{d (a+b x)}\right]}{b^3 d} -$$

$$\frac{1}{b^3 h} 2 B^3 (b g - a h)^3 n^2 \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right] \text{PolyLog}\left[2, 1 + \frac{b c - a d}{d (a + b x)}\right] -$$

$$\frac{1}{d^3 h} 2 B^3 (d g - c h)^3 n^2 \text{Log}\left[e (a + b x)^n (c + d x)^{-n}\right] \text{PolyLog}\left[2, 1 - \frac{b c - a d}{b (c + d x)}\right] -$$

$$\frac{2 B^3 (b g - a h)^3 n^3 \text{PolyLog}\left[3, 1 + \frac{b c - a d}{d (a+b x)}\right]}{b^3 h} + \frac{2 B^3 (d g - c h)^3 n^3 \text{PolyLog}\left[3, 1 - \frac{b c - a d}{b (c+d x)}\right]}{d^3 h}$$

Problem 310: Result valid but suboptimal antiderivative.

$$\int (g+h\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3\,dx$$

Optimal (type 4, 466 leaves, 13 steps):

$$-\frac{1}{b^2\,d^2}3\,B^2\,(b\,c-a\,d)^2\,h\,n^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)-\frac{3\,B\,(b\,c-a\,d)\,h\,n\,(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{2\,b^2\,d}+\frac{1}{2\,b^2\,d^2}3\,B\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2-\frac{(b\,g-a\,h)^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{2\,b^2\,h}+\frac{(g+h\,x)^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{2\,h}-\frac{3\,B^3\,(b\,c-a\,d)^2\,h\,n^3\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^2\,d^2}+\frac{1}{b^2\,d^2}3\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]-\frac{3\,B^3\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^2\,d^2}$$

Result (type 4, 1030 leaves, 35 steps):

$$-\frac{3 A^2 B (b c-a d) h n x}{2 b d}+\frac{A^3 (g+h x)^2}{2 h}-\frac{3 A^2 B (b g-a h)^2 n \text{Log}[a+b x]}{2 b^2 h}+$$
$$\frac{3 A^2 B (d g-c h)^2 n \text{Log}[c+d x]}{2 d^2 h}+\frac{3 A B^2 (b c-a d)^2 h n^2 \text{Log}[c+d x]}{b^2 d^2}-$$
$$\frac{3 A B^2 (b c-a d) h n (a+b x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2 d}+$$
$$\frac{3 A^2 B (g+h x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{2 h}+$$
$$\frac{3 A B^2 (b g-a h)^2 n \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2 h}-$$
$$\frac{3 A B^2 (d g-c h)^2 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^2 h}-$$
$$\frac{3 B^3 (b c-a d)^2 h n^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2 d^2}-$$
$$\frac{3 B^3 (b c-a d) h n (a+b x) \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 b^2 d}+$$
$$\frac{3 A B^2 (g+h x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 h}+$$
$$\frac{3 B^3 (b g-a h)^2 n \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 b^2 h}-$$
$$\frac{3 B^3 (d g-c h)^2 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 d^2 h}+$$
$$\frac{B^3 (g+h x)^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3}{2 h}-\frac{3 A B^2 (d g-c h)^2 n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 h}-$$
$$\frac{3 B^3 (b c-a d)^2 h n^3 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b^2 d^2}-\frac{3 A B^2 (b g-a h)^2 n^2 \text{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{b^2 h}-$$
$$\frac{1}{b^2 h} 3 B^3 (b g-a h)^2 n^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \text{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]-$$
$$\frac{1}{d^2 h} 3 B^3 (d g-c h)^2 n^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \text{PolyLog}\left[2, 1-\frac{b c-a d}{b (c+d x)}\right]-$$
$$\frac{3 B^3 (b g-a h)^2 n^3 \text{PolyLog}\left[3, 1+\frac{b c-a d}{d (a+b x)}\right]}{b^2 h}+\frac{3 B^3 (d g-c h)^2 n^3 \text{PolyLog}\left[3, 1-\frac{b c-a d}{b (c+d x)}\right]}{d^2 h}$$

Problem 311: Result valid but suboptimal antiderivative.

$$\int \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3 dx$$

Optimal (type 4, 203 leaves, 6 steps):

$$\frac{3\,B\,(b\,c-a\,d)\,n\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{b\,d}+$$

$$\frac{(a+b\,x)\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{b}+\frac{1}{b\,d}$$

$$6\,B^2\,(b\,c-a\,d)\,n^2\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]-$$

$$\frac{6\,B^3\,(b\,c-a\,d)\,n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,d}$$

Result (type 4, 408 leaves, 14 steps):

$$A^3\,x-\frac{3\,A^2\,B\,(b\,c-a\,d)\,n\,\text{Log}[c+d\,x]}{b\,d}+\frac{3\,A^2\,B\,(a+b\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{b}+$$

$$\frac{6\,A\,B^2\,(b\,c-a\,d)\,n\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{b\,d}+$$

$$\frac{3\,A\,B^2\,(a+b\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{b}+$$

$$\frac{3\,B^3\,(b\,c-a\,d)\,n\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{b\,d}+$$

$$\frac{B^3\,(a+b\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^3}{b}+\frac{6\,A\,B^2\,(b\,c-a\,d)\,n^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,d}+$$

$$\frac{6\,B^3\,(b\,c-a\,d)\,n^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\text{PolyLog}\left[2,1-\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{b\,d}-$$

$$\frac{6\,B^3\,(b\,c-a\,d)\,n^3\,\text{PolyLog}\left[3,1-\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{b\,d}$$

Problem 312: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{g+h\,x}\,dx$$

Optimal (type 4, 425 leaves, 12 steps):

$$-\frac{\text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{h}+\frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3 \text{Log}\left[1-\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{h}-\frac{3 B n \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{h}+\frac{3 B n \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 \text{PolyLog}\left[2,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{h}+\frac{6 B^2 n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{h}-\frac{6 B^2 n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[3,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{h}-\frac{6 B^3 n^3 \text{PolyLog}\left[4,\frac{d (a+b x)}{b (c+d x)}\right]}{h}+\frac{6 B^3 n^3 \text{PolyLog}\left[4,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{h}$$

Result (type 4, 921 leaves, 25 steps):

$$-\frac{3\,A\,B^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{h}-\frac{B^3\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^3}{h}+$$
$$\frac{A^3\,\text{Log}[g+h\,x]}{h}-\frac{3\,A^2\,B\,n\,\text{Log}\left[-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]\,\text{Log}[g+h\,x]}{h}+$$
$$\frac{3\,A^2\,B\,n\,\text{Log}\left[-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]\,\text{Log}[g+h\,x]}{h}+\frac{3\,A^2\,B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}[g+h\,x]}{h}+$$
$$\frac{3\,A\,B^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2\,\text{Log}\left[\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{h}+$$
$$\frac{B^3\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^3\,\text{Log}\left[\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{h}-\frac{3\,A^2\,B\,n\,\text{PolyLog}\left[2,\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h}+$$
$$\frac{3\,A^2\,B\,n\,\text{PolyLog}\left[2,\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h}-\frac{6\,A\,B^2\,n\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[2,1-\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{h}-$$
$$\frac{3\,B^3\,n\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2\,\text{PolyLog}\left[2,1-\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{h}+$$
$$\frac{6\,A\,B^2\,n\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[2,1-\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{h}+$$
$$\frac{3\,B^3\,n\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2\,\text{PolyLog}\left[2,1-\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{h}+$$
$$\frac{6\,A\,B^2\,n^2\,\text{PolyLog}\left[3,1-\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{h}+\frac{6\,B^3\,n^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[3,1-\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{h}-$$
$$\frac{6\,A\,B^2\,n^2\,\text{PolyLog}\left[3,1-\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{h}-$$
$$\frac{6\,B^3\,n^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[3,1-\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{h}-$$
$$\frac{6\,B^3\,n^3\,\text{PolyLog}\left[4,1-\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{h}+\frac{6\,B^3\,n^3\,\text{PolyLog}\left[4,1-\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{h}$$

Problem 313: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{(g+h\,x)^2}\,dx$$

Optimal (type 4, 302 leaves, 6 steps):

$$\frac{(a+b x)\,\left(A+B \operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)^3}{(b g-a h)\,(g+h x)}+$$
$$\left(3 B\,(b c-a d)\,n\,\left(A+B \operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)^2 \operatorname{Log}\left[1-\frac{(d g-c h)\,(a+b x)}{(b g-a h)\,(c+d x)}\right]\right)\Big/$$
$$\left((b g-a h)\,(d g-c h)\right)+$$
$$\left(6 B^2\,(b c-a d)\,n^2\,\left(A+B \operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right) \operatorname{PolyLog}\left[2,\frac{(d g-c h)\,(a+b x)}{(b g-a h)\,(c+d x)}\right]\right)\Big/$$
$$\left((b g-a h)\,(d g-c h)\right)-\frac{6 B^3\,(b c-a d)\,n^3 \operatorname{PolyLog}\left[3,\frac{(d g-c h)\,(a+b x)}{(b g-a h)\,(c+d x)}\right]}{(b g-a h)\,(d g-c h)}$$

Result (type 4, 650 leaves, 14 steps):

$$-\frac{A^3}{h\,(g+h x)}-\frac{3 A^2 B\,(b c-a d)\,n \operatorname{Log}[c+d x]}{(b g-a h)\,(d g-c h)}+\frac{3 A^2 B\,(a+b x) \operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]}{(b g-a h)\,(g+h x)}+$$
$$\frac{3 A B^2\,(a+b x) \operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]^2}{(b g-a h)\,(g+h x)}+\frac{B^3\,(a+b x) \operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]^3}{(b g-a h)\,(g+h x)}+$$
$$\frac{3 A^2 B\,(b c-a d)\,n \operatorname{Log}[g+h x]}{(b g-a h)\,(d g-c h)}+\frac{6 A B^2\,(b c-a d)\,n \operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right] \operatorname{Log}\left[\frac{(b c-a d)\,(g+h x)}{(b g-a h)\,(c+d x)}\right]}{(b g-a h)\,(d g-c h)}+$$
$$\frac{3 B^3\,(b c-a d)\,n \operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]^2 \operatorname{Log}\left[\frac{(b c-a d)\,(g+h x)}{(b g-a h)\,(c+d x)}\right]}{(b g-a h)\,(d g-c h)}+$$
$$\frac{6 A B^2\,(b c-a d)\,n^2 \operatorname{PolyLog}\left[2,1-\frac{(b c-a d)\,(g+h x)}{(b g-a h)\,(c+d x)}\right]}{(b g-a h)\,(d g-c h)}+$$
$$\left(6 B^3\,(b c-a d)\,n^2 \operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right] \operatorname{PolyLog}\left[2,1-\frac{(b c-a d)\,(g+h x)}{(b g-a h)\,(c+d x)}\right]\right)\Big/$$
$$\left((b g-a h)\,(d g-c h)\right)-\frac{6 B^3\,(b c-a d)\,n^3 \operatorname{PolyLog}\left[3,1-\frac{(b c-a d)\,(g+h x)}{(b g-a h)\,(c+d x)}\right]}{(b g-a h)\,(d g-c h)}$$

Problem 314: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)^3}{(g+h x)^3}\,dx$$

Optimal (type 4, 629 leaves, 13 steps):

$$\frac{3\,B\,(b\,c-a\,d)\,h\,n\,(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{2\,(b\,g-a\,h)^2\,(d\,g-c\,h)\,(g+h\,x)}+$$

$$\frac{b^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{2\,h\,(b\,g-a\,h)^2}-\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{2\,h\,(g+h\,x)^2}+$$

$$\left(3\,B^2\,(b\,c-a\,d)^2\,h\,n^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{Log}\left[1-\frac{(d\,g-c\,h)\,(a+b\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]\right)\Big/$$

$$\left((b\,g-a\,h)^2\,(d\,g-c\,h)^2\right)+\Bigg(3\,B\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n$$

$$\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,\text{Log}\left[1-\frac{(d\,g-c\,h)\,(a+b\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]\Bigg)\Big/$$

$$\left(2\,(b\,g-a\,h)^2\,(d\,g-c\,h)^2\right)+\frac{3\,B^3\,(b\,c-a\,d)^2\,h\,n^3\,\text{PolyLog}\left[2,\frac{(d\,g-c\,h)\,(a+b\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}+$$

$$\Bigg(3\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)$$

$$\text{PolyLog}\left[2,\frac{(d\,g-c\,h)\,(a+b\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]\Bigg)\Big/\left((b\,g-a\,h)^2\,(d\,g-c\,h)^2\right)-$$

$$\frac{3\,B^3\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^3\,\text{PolyLog}\left[3,\frac{(d\,g-c\,h)\,(a+b\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}$$

Result (type 4, 2207 leaves, 49 steps):

$$-\frac{A^3}{2\,h\,(g+h\,x)^2}-\frac{3\,A^2\,B\,(b\,c-a\,d)\,n}{2\,(b\,g-a\,h)\,(d\,g-c\,h)\,(g+h\,x)}+\frac{3\,A^2\,b^2\,B\,n\,\text{Log}[a+b\,x]}{2\,h\,(b\,g-a\,h)^2}-$$

$$\frac{3\,A^2\,B\,d^2\,n\,\text{Log}[c+d\,x]}{2\,h\,(d\,g-c\,h)^2}-\frac{3\,A\,B^2\,(b\,c-a\,d)^2\,h\,n^2\,\text{Log}[c+d\,x]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}-$$

$$\frac{3\,A^2\,B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{2\,h\,(g+h\,x)^2}+\frac{3\,A\,B^2\,(b\,c-a\,d)\,h\,n\,(a+b\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{(b\,g-a\,h)^2\,(d\,g-c\,h)\,(g+h\,x)}-$$

$$\frac{3\,A\,b^2\,B^2\,n\,\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{h\,(b\,g-a\,h)^2}+$$

$$\frac{3\,A\,B^2\,d^2\,n\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{h\,(d\,g-c\,h)^2}-\frac{3\,A\,B^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{2\,h\,(g+h\,x)^2}+$$

$$\frac{3\,B^3\,(b\,c-a\,d)\,h\,n\,(a+b\,x)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{2\,(b\,g-a\,h)^2\,(d\,g-c\,h)\,(g+h\,x)}-$$

$$\frac{3\,b^2\,B^3\,n\,\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{2\,h\,(b\,g-a\,h)^2}+$$

$$\frac{3\,B^3\,d^2\,n\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{2\,h\,(d\,g-c\,h)^2}-$$

$$\left(3\,B^3\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2\right)\Big/$$

$$\left(2\,(b\,g-a\,h)^2\,(d\,g-c\,h)^2\right)-\frac{B^3\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^3}{2\,h\,(g+h\,x)^2}+$$

$$\frac{3\,A^2\,B\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n\,\mathrm{Log}[g+h\,x]}{2\,(b\,g-a\,h)^2\,(d\,g-c\,h)^2}+\frac{3\,A\,B^2\,(b\,c-a\,d)^2\,h\,n^2\,\mathrm{Log}[g+h\,x]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}-$$

$$\frac{3\,A\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^2\,\mathrm{Log}\left[-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]\,\mathrm{Log}[g+h\,x]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}+$$

$$\frac{3\,A\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^2\,\mathrm{Log}\left[-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]\,\mathrm{Log}[g+h\,x]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}+$$

$$\left(3\,A\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{Log}[g+h\,x]\right)\Big/$$

$$\left((b\,g-a\,h)^2\,(d\,g-c\,h)^2\right)+\frac{3\,B^3\,(b\,c-a\,d)^2\,h\,n^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{Log}\left[\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}+$$

$$\left(3\,B^3\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2\,\mathrm{Log}\left[\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]\right)\Big/$$

$$\left(2\,(b\,g-a\,h)^2\,(d\,g-c\,h)^2\right)+\frac{3\,A\,B^2\,d^2\,n^2\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{h\,(d\,g-c\,h)^2}-$$

$$\frac{3\,A\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^2\,\mathrm{PolyLog}\left[2,\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}+$$

$$\frac{3\,A\,B^2\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^2\,\mathrm{PolyLog}\left[2,\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}+$$

$$\frac{3\,A\,b^2\,B^2\,n^2\,\mathrm{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{h\,(b\,g-a\,h)^2}+$$

$$\frac{3\,b^2\,B^3\,n^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{h\,(b\,g-a\,h)^2}+$$

$$\frac{3\,B^3\,d^2\,n^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{PolyLog}\left[2,1-\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{h\,(d\,g-c\,h)^2}-$$

$$\left(3\,B^3\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{PolyLog}\left[2,1-\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\right)\Big/$$

$$\left((b\,g-a\,h)^2\,(d\,g-c\,h)^2\right)+\frac{3\,B^3\,(b\,c-a\,d)^2\,h\,n^3\,\mathrm{PolyLog}\left[2,1-\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}+$$

$$\left(3\,B^3\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right.$$
$$\left.\text{PolyLog}\left[2,\,1-\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]\right)\Big/\left((b\,g-a\,h)^2\,(d\,g-c\,h)^2\right)+$$
$$\frac{3\,b^2\,B^3\,n^3\,\text{PolyLog}\left[3,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{h\,(b\,g-a\,h)^2}-\frac{3\,B^3\,d^2\,n^3\,\text{PolyLog}\left[3,\,1-\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{h\,(d\,g-c\,h)^2}+$$
$$\frac{3\,B^3\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^3\,\text{PolyLog}\left[3,\,1-\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}-$$
$$\frac{3\,B^3\,(b\,c-a\,d)\,(2\,b\,d\,g-b\,c\,h-a\,d\,h)\,n^3\,\text{PolyLog}\left[3,\,1-\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{(b\,g-a\,h)^2\,(d\,g-c\,h)^2}$$

Test results for the 263 problems in "3.2.2 (f+g x)^m (h+i x)^q (A+B log(e ((a+b x) over (c+d x))^n))^p.m"

Problem 1: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)dx$$

Optimal (type 3, 212 leaves, 5 steps):

$$-\frac{B\,(b\,c-a\,d)^4\,g^3\,i\,x}{20\,b\,d^3}+\frac{B\,(b\,c-a\,d)^3\,g^3\,i\,(a+b\,x)^2}{40\,b^2\,d^2}-$$
$$\frac{B\,(b\,c-a\,d)^2\,g^3\,i\,(a+b\,x)^3}{60\,b^2\,d}+\frac{g^3\,i\,(a+b\,x)^4\,(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,b}+$$
$$\frac{(b\,c-a\,d)\,g^3\,i\,(a+b\,x)^4\left(A-B+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{20\,b^2}+\frac{B\,(b\,c-a\,d)^5\,g^3\,i\,\text{Log}[c+d\,x]}{20\,b^2\,d^4}$$

Result (type 3, 232 leaves, 10 steps):

$$-\frac{B\,(b\,c-a\,d)^4\,g^3\,i\,x}{20\,b\,d^3}+\frac{B\,(b\,c-a\,d)^3\,g^3\,i\,(a+b\,x)^2}{40\,b^2\,d^2}-\frac{B\,(b\,c-a\,d)^2\,g^3\,i\,(a+b\,x)^3}{60\,b^2\,d}-$$
$$\frac{B\,(b\,c-a\,d)\,g^3\,i\,(a+b\,x)^4}{20\,b^2}+\frac{(b\,c-a\,d)\,g^3\,i\,(a+b\,x)^4\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b^2}+$$
$$\frac{d\,g^3\,i\,(a+b\,x)^5\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,b^2}+\frac{B\,(b\,c-a\,d)^5\,g^3\,i\,\text{Log}[c+d\,x]}{20\,b^2\,d^4}$$

Problem 2: Result valid but suboptimal antiderivative.

$$\int (a\,g + b\,g\,x)^2\,(c\,i + d\,i\,x)\left(A + B\,\mathrm{Log}\left[\frac{e\,(a + b\,x)}{c + d\,x}\right]\right)dx$$

Optimal (type 3, 180 leaves, 5 steps):

$$\frac{B\,(b\,c - a\,d)^3\,g^2\,i\,x}{12\,b\,d^2} - \frac{B\,(b\,c - a\,d)^2\,g^2\,i\,(a + b\,x)^2}{24\,b^2\,d} + \frac{g^2\,i\,(a + b\,x)^3\,(c + d\,x)\left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b} + \frac{(b\,c - a\,d)\,g^2\,i\,(a + b\,x)^3\left(A - B + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{12\,b^2} - \frac{B\,(b\,c - a\,d)^4\,g^2\,i\,\mathrm{Log}[c + d\,x]}{12\,b^2\,d^3}$$

Result (type 3, 200 leaves, 10 steps):

$$\frac{B\,(b\,c - a\,d)^3\,g^2\,i\,x}{12\,b\,d^2} - \frac{B\,(b\,c - a\,d)^2\,g^2\,i\,(a + b\,x)^2}{24\,b^2\,d} - \frac{B\,(b\,c - a\,d)\,g^2\,i\,(a + b\,x)^3}{12\,b^2} + \frac{(b\,c - a\,d)\,g^2\,i\,(a + b\,x)^3\left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^2} + \frac{d\,g^2\,i\,(a + b\,x)^4\left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b^2} - \frac{B\,(b\,c - a\,d)^4\,g^2\,i\,\mathrm{Log}[c + d\,x]}{12\,b^2\,d^3}$$

Problem 3: Result valid but suboptimal antiderivative.

$$\int (a\,g + b\,g\,x)\,(c\,i + d\,i\,x)\left(A + B\,\mathrm{Log}\left[\frac{e\,(a + b\,x)}{c + d\,x}\right]\right)dx$$

Optimal (type 3, 140 leaves, 5 steps):

$$-\frac{B\,(b\,c - a\,d)^2\,g\,i\,x}{6\,b\,d} + \frac{g\,i\,(a + b\,x)^2\,(c + d\,x)\left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b} + \frac{(b\,c - a\,d)\,g\,i\,(a + b\,x)^2\left(A - B + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,b^2} + \frac{B\,(b\,c - a\,d)^3\,g\,i\,\mathrm{Log}[c + d\,x]}{6\,b^2\,d^2}$$

Result (type 3, 294 leaves, 13 steps):

$$a\,A\,c\,g\,i\,x - \frac{1}{3}\,b\,B\left(\frac{a^2}{b^2} - \frac{c^2}{d^2}\right)d\,g\,i\,x - \frac{B\,(b\,c - a\,d)\,(b\,c + a\,d)\,g\,i\,x}{2\,b\,d} - \frac{1}{6}\,B\,(b\,c - a\,d)\,g\,i\,x^2 + \frac{a^3\,B\,d\,g\,i\,\mathrm{Log}[a + b\,x]}{3\,b^2} - \frac{a^2\,B\,(b\,c + a\,d)\,g\,i\,\mathrm{Log}[a + b\,x]}{2\,b^2} + \frac{a\,B\,c\,g\,i\,(a + b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b} + \frac{1}{2}\,(b\,c + a\,d)\,g\,i\,x^2\left(A + B\,\mathrm{Log}\left[\frac{e\,(a + b\,x)}{c + d\,x}\right]\right) + \frac{1}{3}\,b\,d\,g\,i\,x^3\left(A + B\,\mathrm{Log}\left[\frac{e\,(a + b\,x)}{c + d\,x}\right]\right) - \frac{b\,B\,c^3\,g\,i\,\mathrm{Log}[c + d\,x]}{3\,d^2} - \frac{a\,B\,c\,(b\,c - a\,d)\,g\,i\,\mathrm{Log}[c + d\,x]}{b\,d} + \frac{B\,c^2\,(b\,c + a\,d)\,g\,i\,\mathrm{Log}[c + d\,x]}{2\,d^2}$$

Problem 5: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i + d\,i\,x)\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{a\,g + b\,g\,x}\,dx$$

Optimal (type 4, 133 leaves, 6 steps):

$$\frac{i\,(c+d\,x)\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b\,g} - \frac{(b\,c-a\,d)\,i \operatorname{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\left(A - B + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g} + \frac{B\,(b\,c-a\,d)\,i \operatorname{PolyLog}\left[2, 1 + \frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b^2\,g}$$

Result (type 4, 213 leaves, 14 steps):

$$\frac{A\,d\,i\,x}{b\,g} - \frac{B\,(b\,c-a\,d)\,i \operatorname{Log}[a+b\,x]^2}{2\,b^2\,g} + \frac{B\,d\,i\,(a+b\,x) \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b^2\,g} + \frac{(b\,c-a\,d)\,i \operatorname{Log}[a+b\,x]\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g} - \frac{B\,(b\,c-a\,d)\,i \operatorname{Log}[c+d\,x]}{b^2\,g} + \frac{B\,(b\,c-a\,d)\,i \operatorname{Log}[a+b\,x] \operatorname{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,g} + \frac{B\,(b\,c-a\,d)\,i \operatorname{PolyLog}\left[2, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^2\,g}$$

Problem 6: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i + d\,i\,x)\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g + b\,g\,x)^2}\,dx$$

Optimal (type 4, 142 leaves, 5 steps):

$$-\frac{B\,i\,(c+d\,x)}{b\,g^2\,(a+b\,x)} - \frac{i\,(c+d\,x)\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b\,g^2\,(a+b\,x)} - \frac{d\,i\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right) \operatorname{Log}\left[1 - \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2} + \frac{B\,d\,i \operatorname{PolyLog}\left[2, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2}$$

Result (type 4, 221 leaves, 15 steps):

$$-\frac{B\,(b\,c-a\,d)\,i}{b^2\,g^2\,(a+b\,x)} - \frac{B\,d\,i \operatorname{Log}[a+b\,x]}{b^2\,g^2} - \frac{B\,d\,i \operatorname{Log}[a+b\,x]^2}{2\,b^2\,g^2} - \frac{(b\,c-a\,d)\,i\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g^2\,(a+b\,x)} + \frac{d\,i \operatorname{Log}[a+b\,x]\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g^2} + \frac{B\,d\,i \operatorname{Log}[c+d\,x]}{b^2\,g^2} + \frac{B\,d\,i \operatorname{Log}[a+b\,x] \operatorname{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,g^2} + \frac{B\,d\,i \operatorname{PolyLog}\left[2, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^2\,g^2}$$

Problem 7: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 3, 85 leaves, 2 steps):

$$-\frac{B\,i\,(c+d\,x)^2}{4\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2}-\frac{i\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2}$$

Result (type 3, 191 leaves, 10 steps):

$$-\frac{B\,(b\,c-a\,d)\,i}{4\,b^2\,g^3\,(a+b\,x)^2}-\frac{B\,d\,i}{2\,b^2\,g^3\,(a+b\,x)}-\frac{B\,d^2\,i\,\text{Log}[a+b\,x]}{2\,b^2\,(b\,c-a\,d)\,g^3}-\frac{(b\,c-a\,d)\,i\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^2\,g^3\,(a+b\,x)^2}-\frac{d\,i\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g^3\,(a+b\,x)}+\frac{B\,d^2\,i\,\text{Log}[c+d\,x]}{2\,b^2\,(b\,c-a\,d)\,g^3}$$

Problem 8: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 3, 173 leaves, 5 steps):

$$\frac{B\,d\,i\,(c+d\,x)^2}{4\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^2}-\frac{b\,B\,i\,(c+d\,x)^3}{9\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3}+\frac{d\,i\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^2}-\frac{b\,i\,(c+d\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3}$$

Result (type 3, 225 leaves, 10 steps):

$$-\frac{B\,(b\,c-a\,d)\,i}{9\,b^2\,g^4\,(a+b\,x)^3}-\frac{B\,d\,i}{12\,b^2\,g^4\,(a+b\,x)^2}+\frac{B\,d^2\,i}{6\,b^2\,(b\,c-a\,d)\,g^4\,(a+b\,x)}+\frac{B\,d^3\,i\,\text{Log}[a+b\,x]}{6\,b^2\,(b\,c-a\,d)^2\,g^4}-\frac{(b\,c-a\,d)\,i\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^2\,g^4\,(a+b\,x)^3}-\frac{d\,i\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^2\,g^4\,(a+b\,x)^2}-\frac{B\,d^3\,i\,\text{Log}[c+d\,x]}{6\,b^2\,(b\,c-a\,d)^2\,g^4}$$

Problem 9: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^5}\,dx$$

Optimal (type 3, 269 leaves, 5 steps):

$$-\frac{B d^2 i (c+d x)^2}{4 (b c-a d)^3 g^5 (a+b x)^2}+\frac{2 b B d i (c+d x)^3}{9 (b c-a d)^3 g^5 (a+b x)^3}-\frac{b^2 B i (c+d x)^4}{16 (b c-a d)^3 g^5 (a+b x)^4}-\frac{d^2 i (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^3 g^5 (a+b x)^2}+\frac{2 b d i (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b c-a d)^3 g^5 (a+b x)^3}-\frac{b^2 i (c+d x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 (b c-a d)^3 g^5 (a+b x)^4}$$

Result (type 3, 257 leaves, 10 steps):

$$-\frac{B (b c-a d) i}{16 b^2 g^5 (a+b x)^4}-\frac{B d i}{36 b^2 g^5 (a+b x)^3}+\frac{B d^2 i}{24 b^2 (b c-a d) g^5 (a+b x)^2}-\frac{B d^3 i}{12 b^2 (b c-a d)^2 g^5 (a+b x)}-\frac{B d^4 i \operatorname{Log}[a+b x]}{12 b^2 (b c-a d)^3 g^5}-\frac{(b c-a d) i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 b^2 g^5 (a+b x)^4}-\frac{d i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^2 g^5 (a+b x)^3}+\frac{B d^4 i \operatorname{Log}[c+d x]}{12 b^2 (b c-a d)^3 g^5}$$

Problem 10: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^3 (c i+d i x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) dx$$

Optimal (type 3, 423 leaves, 5 steps):

$$\frac{B (b c-a d)^5 g^3 i^2 x}{60 b^2 d^3}+\frac{B (b c-a d)^4 g^3 i^2 (c+d x)^2}{120 b d^4}-\frac{19 B (b c-a d)^3 g^3 i^2 (c+d x)^3}{180 d^4}+\frac{13 b B (b c-a d)^2 g^3 i^2 (c+d x)^4}{120 d^4}-\frac{b^2 B (b c-a d) g^3 i^2 (c+d x)^5}{30 d^4}+\frac{B (b c-a d)^6 g^3 i^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{60 b^3 d^4}-\frac{(b c-a d)^3 g^3 i^2 (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 d^4}+\frac{3 b (b c-a d)^2 g^3 i^2 (c+d x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 d^4}-\frac{3 b^2 (b c-a d) g^3 i^2 (c+d x)^5 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{5 d^4}+\frac{b^3 g^3 i^2 (c+d x)^6 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 d^4}+\frac{B (b c-a d)^6 g^3 i^2 \operatorname{Log}[c+d x]}{60 b^3 d^4}$$

Result (type 3, 330 leaves, 14 steps):

$$-\frac{B\,(b\,c-a\,d)^5\,g^3\,i^2\,x}{60\,b^2\,d^3}+\frac{B\,(b\,c-a\,d)^4\,g^3\,i^2\,(a+b\,x)^2}{120\,b^3\,d^2}-\frac{B\,(b\,c-a\,d)^3\,g^3\,i^2\,(a+b\,x)^3}{180\,b^3\,d}-\frac{7\,B\,(b\,c-a\,d)^2\,g^3\,i^2\,(a+b\,x)^4}{120\,b^3}-\frac{B\,d\,(b\,c-a\,d)\,g^3\,i^2\,(a+b\,x)^5}{30\,b^3}+\frac{(b\,c-a\,d)^2\,g^3\,i^2\,(a+b\,x)^4\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b^3}+\frac{2\,d\,(b\,c-a\,d)\,g^3\,i^2\,(a+b\,x)^5\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,b^3}+\frac{d^2\,g^3\,i^2\,(a+b\,x)^6\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,b^3}+\frac{B\,(b\,c-a\,d)^6\,g^3\,i^2\,\mathrm{Log}[c+d\,x]}{60\,b^3\,d^4}$$

Problem 11: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,dx$$

Optimal (type 3, 337 leaves, 5 steps):

$$-\frac{B\,(b\,c-a\,d)^4\,g^2\,i^2\,x}{30\,b^2\,d^2}-\frac{B\,(b\,c-a\,d)^3\,g^2\,i^2\,(c+d\,x)^2}{60\,b\,d^3}+\frac{B\,(b\,c-a\,d)^2\,g^2\,i^2\,(c+d\,x)^3}{10\,d^3}-\frac{b\,B\,(b\,c-a\,d)\,g^2\,i^2\,(c+d\,x)^4}{20\,d^3}-\frac{B\,(b\,c-a\,d)^5\,g^2\,i^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{30\,b^3\,d^3}+\frac{(b\,c-a\,d)^2\,g^2\,i^2\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,d^3}-\frac{b\,(b\,c-a\,d)\,g^2\,i^2\,(c+d\,x)^4\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,d^3}+\frac{b^2\,g^2\,i^2\,(c+d\,x)^5\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,d^3}-\frac{B\,(b\,c-a\,d)^5\,g^2\,i^2\,\mathrm{Log}[c+d\,x]}{30\,b^3\,d^3}$$

Result (type 3, 296 leaves, 14 steps):

$$\frac{B\,(b\,c-a\,d)^4\,g^2\,i^2\,x}{30\,b^2\,d^2}-\frac{B\,(b\,c-a\,d)^3\,g^2\,i^2\,(a+b\,x)^2}{60\,b^3\,d}-\frac{B\,(b\,c-a\,d)^2\,g^2\,i^2\,(a+b\,x)^3}{10\,b^3}-\frac{B\,d\,(b\,c-a\,d)\,g^2\,i^2\,(a+b\,x)^4}{20\,b^3}+\frac{(b\,c-a\,d)^2\,g^2\,i^2\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^3}+\frac{d\,(b\,c-a\,d)\,g^2\,i^2\,(a+b\,x)^4\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^3}+\frac{d^2\,g^2\,i^2\,(a+b\,x)^5\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,b^3}-\frac{B\,(b\,c-a\,d)^5\,g^2\,i^2\,\mathrm{Log}[c+d\,x]}{30\,b^3\,d^3}$$

Problem 12: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)\,(c\,i+d\,i\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,dx$$

Optimal (type 3, 239 leaves, 5 steps):

$$\frac{B (b c-a d)^3 g i^2 x}{12 b^2 d}+\frac{B (b c-a d)^2 g i^2 (c+d x)^2}{24 b d^2}-\frac{B (b c-a d) g i^2 (c+d x)^3}{12 d^2}+\frac{B (b c-a d)^4 g i^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^3 d^2}-\frac{(b c-a d) g i^2 (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 d^2}+\frac{b g i^2 (c+d x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 d^2}+\frac{B (b c-a d)^4 g i^2 \operatorname{Log}[c+d x]}{12 b^3 d^2}$$

Result (type 3, 200 leaves, 10 steps):

$$\frac{B (b c-a d)^3 g i^2 x}{12 b^2 d}+\frac{B (b c-a d)^2 g i^2 (c+d x)^2}{24 b d^2}-\frac{B (b c-a d) g i^2 (c+d x)^3}{12 d^2}+\frac{B (b c-a d)^4 g i^2 \operatorname{Log}[a+b x]}{12 b^3 d^2}-\frac{(b c-a d) g i^2 (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 d^2}+\frac{b g i^2 (c+d x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 d^2}$$

Problem 14: Result valid but suboptimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{a g+b g x} \, dx$$

Optimal (type 4, 276 leaves, 10 steps):

$$-\frac{B d (b c-a d) i^2 x}{2 b^2 g}-\frac{B (b c-a d)^2 i^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{2 b^3 g}+\frac{d (b c-a d) i^2 (a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g}+\frac{i^2 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b g}-\frac{3 B (b c-a d)^2 i^2 \operatorname{Log}[c+d x]}{2 b^3 g}-\frac{(b c-a d)^2 i^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g}+\frac{B (b c-a d)^2 i^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g}$$

Result (type 4, 354 leaves, 19 steps):

$$\frac{A\,d\,(b\,c-a\,d)\,i^2\,x}{b^2\,g}-\frac{B\,d\,(b\,c-a\,d)\,i^2\,x}{2\,b^2\,g}-\frac{B\,(b\,c-a\,d)^2\,i^2\,\mathrm{Log}[a+b\,x]}{2\,b^3\,g}-\frac{B\,(b\,c-a\,d)^2\,i^2\,\mathrm{Log}[g\,(a+b\,x)]^2}{2\,b^3\,g}+\frac{B\,d\,(b\,c-a\,d)\,i^2\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b^3\,g}+\frac{i^2\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b\,g}-\frac{B\,(b\,c-a\,d)^2\,i^2\,\mathrm{Log}[c+d\,x]}{b^3\,g}+\frac{(b\,c-a\,d)^2\,i^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[a\,g+b\,g\,x]}{b^3\,g}+\frac{B\,(b\,c-a\,d)^2\,i^2\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[a\,g+b\,g\,x]}{b^3\,g}+\frac{B\,(b\,c-a\,d)^2\,i^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^3\,g}$$

Problem 15: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 4, 247 leaves, 8 steps):

$$-\frac{B\,(b\,c-a\,d)\,i^2\,(c+d\,x)}{b^2\,g^2\,(a+b\,x)}+\frac{d^2\,i^2\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g^2}-\frac{(b\,c-a\,d)\,i^2\,(c+d\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g^2\,(a+b\,x)}-\frac{B\,d\,(b\,c-a\,d)\,i^2\,\mathrm{Log}[c+d\,x]}{b^3\,g^2}-\frac{2\,d\,(b\,c-a\,d)\,i^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^2}+\frac{2\,B\,d\,(b\,c-a\,d)\,i^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^2}$$

Result (type 4, 313 leaves, 18 steps):

$$\frac{A\,d^2\,i^2\,x}{b^2\,g^2}-\frac{B\,(b\,c-a\,d)^2\,i^2}{b^3\,g^2\,(a+b\,x)}-\frac{B\,d\,(b\,c-a\,d)\,i^2\,\mathrm{Log}[a+b\,x]}{b^3\,g^2}-\frac{B\,d\,(b\,c-a\,d)\,i^2\,\mathrm{Log}[a+b\,x]^2}{b^3\,g^2}+\frac{B\,d^2\,i^2\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b^3\,g^2}-\frac{(b\,c-a\,d)^2\,i^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g^2\,(a+b\,x)}+\frac{2\,d\,(b\,c-a\,d)\,i^2\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g^2}+\frac{2\,B\,d\,(b\,c-a\,d)\,i^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^3\,g^2}+\frac{2\,B\,d\,(b\,c-a\,d)\,i^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^3\,g^2}$$

Problem 16: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 4, 230 leaves, 7 steps):

$$-\frac{B\,d\,i^2\,(c+d\,x)}{b^2\,g^3\,(a+b\,x)}-\frac{B\,i^2\,(c+d\,x)^2}{4\,b\,g^3\,(a+b\,x)^2}-\frac{d\,i^2\,(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g^3\,(a+b\,x)}-\frac{i^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b\,g^3\,(a+b\,x)^2}-\frac{d^2\,i^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}+\frac{B\,d^2\,i^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}$$

Result (type 4, 338 leaves, 19 steps):

$$-\frac{B\,(b\,c-a\,d)^2\,i^2}{4\,b^3\,g^3\,(a+b\,x)^2}-\frac{3\,B\,d\,(b\,c-a\,d)\,i^2}{2\,b^3\,g^3\,(a+b\,x)}-\frac{3\,B\,d^2\,i^2\,\text{Log}[a+b\,x]}{2\,b^3\,g^3}-\frac{B\,d^2\,i^2\,\text{Log}[a+b\,x]^2}{2\,b^3\,g^3}-\frac{(b\,c-a\,d)^2\,i^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^3\,g^3\,(a+b\,x)^2}-\frac{2\,d\,(b\,c-a\,d)\,i^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g^3\,(a+b\,x)}+\frac{d^2\,i^2\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g^3}+\frac{3\,B\,d^2\,i^2\,\text{Log}[c+d\,x]}{2\,b^3\,g^3}+\frac{B\,d^2\,i^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^3\,g^3}+\frac{B\,d^2\,i^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^3\,g^3}$$

Problem 17: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 3, 89 leaves, 2 steps):

$$-\frac{B\,i^2\,(c+d\,x)^3}{9\,(b\,c-a\,d)\,g^4\,(a+b\,x)^3}-\frac{i^2\,(c+d\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,(b\,c-a\,d)\,g^4\,(a+b\,x)^3}$$

Result (type 3, 287 leaves, 14 steps):

$$-\frac{B\,(b\,c-a\,d)^2\,i^2}{9\,b^3\,g^4\,(a+b\,x)^3}-\frac{B\,d\,(b\,c-a\,d)\,i^2}{3\,b^3\,g^4\,(a+b\,x)^2}-\frac{B\,d^2\,i^2}{3\,b^3\,g^4\,(a+b\,x)}-\frac{B\,d^3\,i^2\,\text{Log}[a+b\,x]}{3\,b^3\,(b\,c-a\,d)\,g^4}-\frac{(b\,c-a\,d)^2\,i^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^3\,g^4\,(a+b\,x)^3}-\frac{d\,(b\,c-a\,d)\,i^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g^4\,(a+b\,x)^2}-\frac{d^2\,i^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g^4\,(a+b\,x)}+\frac{B\,d^3\,i^2\,\text{Log}[c+d\,x]}{3\,b^3\,(b\,c-a\,d)\,g^4}$$

Problem 18: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^5}\,dx$$

Optimal (type 3, 181 leaves, 5 steps):

$$\frac{B\,d\,i^2\,(c+d\,x)^3}{9\,(b\,c-a\,d)^2\,g^5\,(a+b\,x)^3}-\frac{b\,B\,i^2\,(c+d\,x)^4}{16\,(b\,c-a\,d)^2\,g^5\,(a+b\,x)^4}+\frac{d\,i^2\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,(b\,c-a\,d)^2\,g^5\,(a+b\,x)^3}-\frac{b\,i^2\,(c+d\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,(b\,c-a\,d)^2\,g^5\,(a+b\,x)^4}$$

Result (type 3, 325 leaves, 14 steps):

$$-\frac{B\,(b\,c-a\,d)^2\,i^2}{16\,b^3\,g^5\,(a+b\,x)^4}-\frac{5\,B\,d\,(b\,c-a\,d)\,i^2}{36\,b^3\,g^5\,(a+b\,x)^3}-\frac{B\,d^2\,i^2}{24\,b^3\,g^5\,(a+b\,x)^2}+\frac{B\,d^3\,i^2}{12\,b^3\,(b\,c-a\,d)\,g^5\,(a+b\,x)}+\frac{B\,d^4\,i^2\,\text{Log}[a+b\,x]}{12\,b^3\,(b\,c-a\,d)^2\,g^5}-\frac{(b\,c-a\,d)^2\,i^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b^3\,g^5\,(a+b\,x)^4}-\frac{2\,d\,(b\,c-a\,d)\,i^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^3\,g^5\,(a+b\,x)^3}-\frac{d^2\,i^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^3\,g^5\,(a+b\,x)^2}-\frac{B\,d^4\,i^2\,\text{Log}[c+d\,x]}{12\,b^3\,(b\,c-a\,d)^2\,g^5}$$

Problem 19: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^6}\,dx$$

Optimal (type 3, 281 leaves, 5 steps):

$$-\frac{B d^2 i^2 (c+d x)^3}{9 (b c-a d)^3 g^6 (a+b x)^3}+\frac{b B d i^2 (c+d x)^4}{8 (b c-a d)^3 g^6 (a+b x)^4}-\frac{b^2 B i^2 (c+d x)^5}{25 (b c-a d)^3 g^6 (a+b x)^5}-\frac{d^2 i^2 (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b c-a d)^3 g^6 (a+b x)^3}+\frac{b d i^2 (c+d x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^3 g^6 (a+b x)^4}-\frac{b^2 i^2 (c+d x)^5 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{5 (b c-a d)^3 g^6 (a+b x)^5}$$

Result (type 3, 359 leaves, 14 steps):

$$-\frac{B (b c-a d)^2 i^2}{25 b^3 g^6 (a+b x)^5}-\frac{3 B d (b c-a d) i^2}{40 b^3 g^6 (a+b x)^4}-\frac{B d^2 i^2}{90 b^3 g^6 (a+b x)^3}+\frac{B d^3 i^2}{60 b^3 (b c-a d) g^6 (a+b x)^2}-\frac{B d^4 i^2}{30 b^3 (b c-a d)^2 g^6 (a+b x)}-\frac{B d^5 i^2 \operatorname{Log}[a+b x]}{30 b^3 (b c-a d)^3 g^6}-\frac{(b c-a d)^2 i^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{5 b^3 g^6 (a+b x)^5}-\frac{d (b c-a d) i^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^3 g^6 (a+b x)^4}-\frac{d^2 i^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^3 g^6 (a+b x)^3}+\frac{B d^5 i^2 \operatorname{Log}[c+d x]}{30 b^3 (b c-a d)^3 g^6}$$

Problem 20: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^3 (c i+d i x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) dx$$

Optimal (type 3, 457 leaves, 5 steps):

$$\frac{B (b c-a d)^6 g^3 i^3 x}{140 b^3 d^3}+\frac{B (b c-a d)^5 g^3 i^3 (c+d x)^2}{280 b^2 d^4}+\frac{B (b c-a d)^4 g^3 i^3 (c+d x)^3}{420 b d^4}-\frac{17 B (b c-a d)^3 g^3 i^3 (c+d x)^4}{280 d^4}+\frac{b B (b c-a d)^2 g^3 i^3 (c+d x)^5}{14 d^4}-\frac{b^2 B (b c-a d) g^3 i^3 (c+d x)^6}{42 d^4}+\frac{B (b c-a d)^7 g^3 i^3 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{140 b^4 d^4}-\frac{(b c-a d)^3 g^3 i^3 (c+d x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 d^4}+\frac{3 b (b c-a d)^2 g^3 i^3 (c+d x)^5 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{5 d^4}-\frac{b^2 (b c-a d) g^3 i^3 (c+d x)^6 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^4}+\frac{b^3 g^3 i^3 (c+d x)^7 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{7 d^4}+\frac{B (b c-a d)^7 g^3 i^3 \operatorname{Log}[c+d x]}{140 b^4 d^4}$$

Result (type 3, 416 leaves, 18 steps):

$$-\frac{B\,(b\,c-a\,d)^6\,g^3\,i^3\,x}{140\,b^3\,d^3}+\frac{B\,(b\,c-a\,d)^5\,g^3\,i^3\,(a+b\,x)^2}{280\,b^4\,d^2}-\frac{B\,(b\,c-a\,d)^4\,g^3\,i^3\,(a+b\,x)^3}{420\,b^4\,d}-\frac{17\,B\,(b\,c-a\,d)^3\,g^3\,i^3\,(a+b\,x)^4}{280\,b^4}-\frac{B\,d\,(b\,c-a\,d)^2\,g^3\,i^3\,(a+b\,x)^5}{14\,b^4}-\frac{B\,d^2\,(b\,c-a\,d)\,g^3\,i^3\,(a+b\,x)^6}{42\,b^4}+\frac{(b\,c-a\,d)^3\,g^3\,i^3\,(a+b\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b^4}+\frac{3\,d\,(b\,c-a\,d)^2\,g^3\,i^3\,(a+b\,x)^5\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,b^4}+\frac{d^2\,(b\,c-a\,d)\,g^3\,i^3\,(a+b\,x)^6\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^4}+\frac{d^3\,g^3\,i^3\,(a+b\,x)^7\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{7\,b^4}+\frac{B\,(b\,c-a\,d)^7\,g^3\,i^3\,\text{Log}[c+d\,x]}{140\,b^4\,d^4}$$

Problem 21: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,dx$$

Optimal (type 3, 371 leaves, 5 steps):

$$-\frac{B\,(b\,c-a\,d)^5\,g^2\,i^3\,x}{60\,b^3\,d^2}-\frac{B\,(b\,c-a\,d)^4\,g^2\,i^3\,(c+d\,x)^2}{120\,b^2\,d^3}-\frac{B\,(b\,c-a\,d)^3\,g^2\,i^3\,(c+d\,x)^3}{180\,b\,d^3}+\frac{7\,B\,(b\,c-a\,d)^2\,g^2\,i^3\,(c+d\,x)^4}{120\,d^3}-\frac{b\,B\,(b\,c-a\,d)\,g^2\,i^3\,(c+d\,x)^5}{30\,d^3}-\frac{B\,(b\,c-a\,d)^6\,g^2\,i^3\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{60\,b^4\,d^3}+\frac{(b\,c-a\,d)^2\,g^2\,i^3\,(c+d\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,d^3}-\frac{2\,b\,(b\,c-a\,d)\,g^2\,i^3\,(c+d\,x)^5\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,d^3}+\frac{b^2\,g^2\,i^3\,(c+d\,x)^6\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,d^3}-\frac{B\,(b\,c-a\,d)^6\,g^2\,i^3\,\text{Log}[c+d\,x]}{60\,b^4\,d^3}$$

Result (type 3, 330 leaves, 14 steps):

$$-\frac{B\,(b\,c-a\,d)^5\,g^2\,i^3\,x}{60\,b^3\,d^2}-\frac{B\,(b\,c-a\,d)^4\,g^2\,i^3\,(c+d\,x)^2}{120\,b^2\,d^3}-\frac{B\,(b\,c-a\,d)^3\,g^2\,i^3\,(c+d\,x)^3}{180\,b\,d^3}+\frac{7\,B\,(b\,c-a\,d)^2\,g^2\,i^3\,(c+d\,x)^4}{120\,d^3}-\frac{b\,B\,(b\,c-a\,d)\,g^2\,i^3\,(c+d\,x)^5}{30\,d^3}-\frac{B\,(b\,c-a\,d)^6\,g^2\,i^3\,\text{Log}[a+b\,x]}{60\,b^4\,d^3}+\frac{(b\,c-a\,d)^2\,g^2\,i^3\,(c+d\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,d^3}-\frac{2\,b\,(b\,c-a\,d)\,g^2\,i^3\,(c+d\,x)^5\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,d^3}+\frac{b^2\,g^2\,i^3\,(c+d\,x)^6\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,d^3}$$

Problem 22: Result valid but suboptimal antiderivative.

$$\int (a g + b g x) (c i + d i x)^3 \left(A + B \operatorname{Log}\left[\frac{e (a + b x)}{c + d x}\right]\right) dx$$

Optimal (type 3, 271 leaves, 5 steps):

$$\frac{B (b c - a d)^4 g i^3 x}{20 b^3 d} + \frac{B (b c - a d)^3 g i^3 (c + d x)^2}{40 b^2 d^2} + \frac{B (b c - a d)^2 g i^3 (c + d x)^3}{60 b d^2} - \frac{B (b c - a d) g i^3 (c + d x)^4}{20 d^2} + \frac{B (b c - a d)^5 g i^3 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{20 b^4 d^2} - \frac{(b c - a d) g i^3 (c + d x)^4 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 d^2} + \frac{b g i^3 (c + d x)^5 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{5 d^2} + \frac{B (b c - a d)^5 g i^3 \operatorname{Log}[c + d x]}{20 b^4 d^2}$$

Result (type 3, 232 leaves, 10 steps):

$$\frac{B (b c - a d)^4 g i^3 x}{20 b^3 d} + \frac{B (b c - a d)^3 g i^3 (c + d x)^2}{40 b^2 d^2} + \frac{B (b c - a d)^2 g i^3 (c + d x)^3}{60 b d^2} - \frac{B (b c - a d) g i^3 (c + d x)^4}{20 d^2} + \frac{B (b c - a d)^5 g i^3 \operatorname{Log}[a + b x]}{20 b^4 d^2} - \frac{(b c - a d) g i^3 (c + d x)^4 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 d^2} + \frac{b g i^3 (c + d x)^5 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{5 d^2}$$

Problem 24: Result valid but suboptimal antiderivative.

$$\int \frac{(c i + d i x)^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{a g + b g x} dx$$

Optimal (type 4, 356 leaves, 14 steps):

$$-\frac{5 B d (b c - a d)^2 i^3 x}{6 b^3 g} - \frac{B (b c - a d) i^3 (c + d x)^2}{6 b^2 g} - \frac{5 B (b c - a d)^3 i^3 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{6 b^4 g} + \frac{d (b c - a d)^2 i^3 (a + b x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g} + \frac{(b c - a d) i^3 (c + d x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^2 g} + \frac{i^3 (c + d x)^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b g} - \frac{11 B (b c - a d)^3 i^3 \operatorname{Log}[c + d x]}{6 b^4 g} - \frac{(b c - a d)^3 i^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g} + \frac{B (b c - a d)^3 i^3 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g}$$

Result (type 4, 436 leaves, 23 steps):

$$\frac{A\,d\,(b\,c-a\,d)^2\,i^3\,x}{b^3\,g}-\frac{5\,B\,d\,(b\,c-a\,d)^2\,i^3\,x}{6\,b^3\,g}-\frac{B\,(b\,c-a\,d)\,i^3\,(c+d\,x)^2}{6\,b^2\,g}-\frac{5\,B\,(b\,c-a\,d)^3\,i^3\,\text{Log}[a+b\,x]}{6\,b^4\,g}-\frac{B\,(b\,c-a\,d)^3\,i^3\,\text{Log}[g\,(a+b\,x)]^2}{2\,b^4\,g}+\frac{B\,d\,(b\,c-a\,d)^2\,i^3\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b^4\,g}+\frac{(b\,c-a\,d)\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^2\,g}+\frac{i^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,g}-\frac{B\,(b\,c-a\,d)^3\,i^3\,\text{Log}[c+d\,x]}{b^4\,g}+\frac{(b\,c-a\,d)^3\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[a\,g+b\,g\,x]}{b^4\,g}+\frac{B\,(b\,c-a\,d)^3\,i^3\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]}{b^4\,g}+\frac{B\,(b\,c-a\,d)^3\,i^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g}$$

Problem 25: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 4, 373 leaves, 11 steps):

$$-\frac{B\,d^2\,(b\,c-a\,d)\,i^3\,x}{2\,b^3\,g^2}-\frac{B\,(b\,c-a\,d)^2\,i^3\,(c+d\,x)}{b^3\,g^2\,(a+b\,x)}-\frac{B\,d\,(b\,c-a\,d)^2\,i^3\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{2\,b^4\,g^2}+\frac{2\,d^2\,(b\,c-a\,d)\,i^3\,(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^2}-\frac{(b\,c-a\,d)^2\,i^3\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g^2\,(a+b\,x)}+\frac{d\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^2\,g^2}-\frac{5\,B\,d\,(b\,c-a\,d)^2\,i^3\,\text{Log}[c+d\,x]}{2\,b^4\,g^2}-\frac{3\,d\,(b\,c-a\,d)^2\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^2}+\frac{3\,B\,d\,(b\,c-a\,d)^2\,i^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^2}$$

Result (type 4, 521 leaves, 22 steps):

$$\frac{A\,d^2\,(3\,b\,c-2\,a\,d)\,i^3\,x}{b^3\,g^2}-\frac{B\,d^2\,(b\,c-a\,d)\,i^3\,x}{2\,b^3\,g^2}-\frac{B\,(b\,c-a\,d)^3\,i^3}{b^4\,g^2\,(a+b\,x)}-$$
$$\frac{a^2\,B\,d^3\,i^3\,\text{Log}[a+b\,x]}{2\,b^4\,g^2}-\frac{B\,d\,(b\,c-a\,d)^2\,i^3\,\text{Log}[a+b\,x]}{b^4\,g^2}-\frac{3\,B\,d\,(b\,c-a\,d)^2\,i^3\,\text{Log}[a+b\,x]^2}{2\,b^4\,g^2}+$$
$$\frac{B\,d^2\,(3\,b\,c-2\,a\,d)\,i^3\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b^4\,g^2}+\frac{d^3\,i^3\,x^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^2\,g^2}-$$
$$\frac{(b\,c-a\,d)^3\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^2\,(a+b\,x)}+\frac{3\,d\,(b\,c-a\,d)^2\,i^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^2}+$$
$$\frac{B\,c^2\,d\,i^3\,\text{Log}[c+d\,x]}{2\,b^2\,g^2}-\frac{B\,d\,(3\,b\,c-2\,a\,d)\,(b\,c-a\,d)\,i^3\,\text{Log}[c+d\,x]}{b^4\,g^2}+\frac{B\,d\,(b\,c-a\,d)^2\,i^3\,\text{Log}[c+d\,x]}{b^4\,g^2}+$$
$$\frac{3\,B\,d\,(b\,c-a\,d)^2\,i^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^2}+\frac{3\,B\,d\,(b\,c-a\,d)^2\,i^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^2}$$

Problem 26: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 4, 345 leaves, 9 steps):

$$-\frac{2\,B\,d\,(b\,c-a\,d)\,i^3\,(c+d\,x)}{b^3\,g^3\,(a+b\,x)}-\frac{B\,(b\,c-a\,d)\,i^3\,(c+d\,x)^2}{4\,b^2\,g^3\,(a+b\,x)^2}+$$
$$\frac{d^3\,i^3\,(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^3}-\frac{2\,d\,(b\,c-a\,d)\,i^3\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g^3\,(a+b\,x)}-$$
$$\frac{(b\,c-a\,d)\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^2\,g^3\,(a+b\,x)^2}-\frac{B\,d^2\,(b\,c-a\,d)\,i^3\,\text{Log}[c+d\,x]}{b^4\,g^3}-$$
$$\frac{3\,d^2\,(b\,c-a\,d)\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^3}+\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^3}$$

Result (type 4, 442 leaves, 22 steps):

$$\frac{A\,d^3\,i^3\,x}{b^3\,g^3}-\frac{B\,(b\,c-a\,d)^3\,i^3}{4\,b^4\,g^3\,(a+b\,x)^2}-\frac{5\,B\,d\,(b\,c-a\,d)^2\,i^3}{2\,b^4\,g^3\,(a+b\,x)}-\frac{5\,B\,d^2\,(b\,c-a\,d)\,i^3\,\text{Log}[a+b\,x]}{2\,b^4\,g^3}-\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3\,\text{Log}[a+b\,x]^2}{2\,b^4\,g^3}+\frac{B\,d^3\,i^3\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b^4\,g^3}-\frac{(b\,c-a\,d)^3\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^4\,g^3\,(a+b\,x)^2}-\frac{3\,d\,(b\,c-a\,d)^2\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^3\,(a+b\,x)}+\frac{3\,d^2\,(b\,c-a\,d)\,i^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^3}+\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3\,\text{Log}[c+d\,x]}{2\,b^4\,g^3}+\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^3}+\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^3}$$

Problem 27: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 4, 310 leaves, 9 steps):

$$-\frac{B\,d^2\,i^3\,(c+d\,x)}{b^3\,g^4\,(a+b\,x)}-\frac{B\,d\,i^3\,(c+d\,x)^2}{4\,b^2\,g^4\,(a+b\,x)^2}-\frac{B\,i^3\,(c+d\,x)^3}{9\,b\,g^4\,(a+b\,x)^3}-\frac{d^2\,i^3\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g^4\,(a+b\,x)}-\frac{d\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^2\,g^4\,(a+b\,x)^2}-\frac{i^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,g^4\,(a+b\,x)^3}-\frac{d^3\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^4}+\frac{B\,d^3\,i^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^4}$$

Result (type 4, 424 leaves, 23 steps):

$$-\frac{B\,(b\,c-a\,d)^3\,i^3}{9\,b^4\,g^4\,(a+b\,x)^3}-\frac{7\,B\,d\,(b\,c-a\,d)^2\,i^3}{12\,b^4\,g^4\,(a+b\,x)^2}-\frac{11\,B\,d^2\,(b\,c-a\,d)\,i^3}{6\,b^4\,g^4\,(a+b\,x)}-\frac{11\,B\,d^3\,i^3\,\text{Log}[a+b\,x]}{6\,b^4\,g^4}-\frac{B\,d^3\,i^3\,\text{Log}[a+b\,x]^2}{2\,b^4\,g^4}-\frac{(b\,c-a\,d)^3\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^4\,g^4\,(a+b\,x)^3}-\frac{3\,d\,(b\,c-a\,d)^2\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^4\,g^4\,(a+b\,x)^2}-\frac{3\,d^2\,(b\,c-a\,d)\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^4\,(a+b\,x)}+\frac{d^3\,i^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^4}+\frac{11\,B\,d^3\,i^3\,\text{Log}[c+d\,x]}{6\,b^4\,g^4}+\frac{B\,d^3\,i^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^4}+\frac{B\,d^3\,i^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^4}$$

Problem 28: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^5}\,dx$$

Optimal (type 3, 89 leaves, 2 steps):

$$-\frac{B\,i^3\,(c+d\,x)^4}{16\,(b\,c-a\,d)\,g^5\,(a+b\,x)^4}-\frac{i^3\,(c+d\,x)^4\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,(b\,c-a\,d)\,g^5\,(a+b\,x)^4}$$

Result (type 3, 373 leaves, 18 steps):

$$-\frac{B\,(b\,c-a\,d)^3\,i^3}{16\,b^4\,g^5\,(a+b\,x)^4}-\frac{B\,d\,(b\,c-a\,d)^2\,i^3}{4\,b^4\,g^5\,(a+b\,x)^3}-\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3}{8\,b^4\,g^5\,(a+b\,x)^2}-\frac{B\,d^3\,i^3}{4\,b^4\,g^5\,(a+b\,x)}-$$
$$\frac{B\,d^4\,i^3\,\mathrm{Log}[a+b\,x]}{4\,b^4\,(b\,c-a\,d)\,g^5}-\frac{(b\,c-a\,d)^3\,i^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b^4\,g^5\,(a+b\,x)^4}-\frac{d\,(b\,c-a\,d)^2\,i^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^5\,(a+b\,x)^3}-$$
$$\frac{3\,d^2\,(b\,c-a\,d)\,i^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^4\,g^5\,(a+b\,x)^2}-\frac{d^3\,i^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^5\,(a+b\,x)}+\frac{B\,d^4\,i^3\,\mathrm{Log}[c+d\,x]}{4\,b^4\,(b\,c-a\,d)\,g^5}$$

Problem 29: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^6}\,dx$$

Optimal (type 3, 181 leaves, 5 steps):

$$\frac{B\,d\,i^3\,(c+d\,x)^4}{16\,(b\,c-a\,d)^2\,g^6\,(a+b\,x)^4}-\frac{b\,B\,i^3\,(c+d\,x)^5}{25\,(b\,c-a\,d)^2\,g^6\,(a+b\,x)^5}+$$
$$\frac{d\,i^3\,(c+d\,x)^4\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,(b\,c-a\,d)^2\,g^6\,(a+b\,x)^4}-\frac{b\,i^3\,(c+d\,x)^5\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,(b\,c-a\,d)^2\,g^6\,(a+b\,x)^5}$$

Result (type 3, 409 leaves, 18 steps):

$$-\frac{B\,(b\,c-a\,d)^3\,i^3}{25\,b^4\,g^6\,(a+b\,x)^5}-\frac{11\,B\,d\,(b\,c-a\,d)^2\,i^3}{80\,b^4\,g^6\,(a+b\,x)^4}-\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3}{20\,b^4\,g^6\,(a+b\,x)^3}-$$
$$\frac{B\,d^3\,i^3}{40\,b^4\,g^6\,(a+b\,x)^2}+\frac{B\,d^4\,i^3}{20\,b^4\,(b\,c-a\,d)\,g^6\,(a+b\,x)}+\frac{B\,d^5\,i^3\,\mathrm{Log}[a+b\,x]}{20\,b^4\,(b\,c-a\,d)^2\,g^6}-$$
$$\frac{(b\,c-a\,d)^3\,i^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,b^4\,g^6\,(a+b\,x)^5}-\frac{3\,d\,(b\,c-a\,d)^2\,i^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b^4\,g^6\,(a+b\,x)^4}-$$
$$\frac{d^2\,(b\,c-a\,d)\,i^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^6\,(a+b\,x)^3}-\frac{d^3\,i^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^4\,g^6\,(a+b\,x)^2}-\frac{B\,d^5\,i^3\,\mathrm{Log}[c+d\,x]}{20\,b^4\,(b\,c-a\,d)^2\,g^6}$$

Problem 30: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3 \left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^7}\,dx$$

Optimal (type 3, 281 leaves, 5 steps):

$$-\frac{B\,d^2\,i^3\,(c+d\,x)^4}{16\,(b\,c-a\,d)^3\,g^7\,(a+b\,x)^4}+\frac{2\,b\,B\,d\,i^3\,(c+d\,x)^5}{25\,(b\,c-a\,d)^3\,g^7\,(a+b\,x)^5}-\frac{b^2\,B\,i^3\,(c+d\,x)^6}{36\,(b\,c-a\,d)^3\,g^7\,(a+b\,x)^6}-\frac{d^2\,i^3\,(c+d\,x)^4\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,(b\,c-a\,d)^3\,g^7\,(a+b\,x)^4}+\frac{2\,b\,d\,i^3\,(c+d\,x)^5\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,(b\,c-a\,d)^3\,g^7\,(a+b\,x)^5}-\frac{b^2\,i^3\,(c+d\,x)^6\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,(b\,c-a\,d)^3\,g^7\,(a+b\,x)^6}$$

Result (type 3, 445 leaves, 18 steps):

$$-\frac{B\,(b\,c-a\,d)^3\,i^3}{36\,b^4\,g^7\,(a+b\,x)^6}-\frac{13\,B\,d\,(b\,c-a\,d)^2\,i^3}{150\,b^4\,g^7\,(a+b\,x)^5}-\frac{19\,B\,d^2\,(b\,c-a\,d)\,i^3}{240\,b^4\,g^7\,(a+b\,x)^4}-\frac{B\,d^3\,i^3}{180\,b^4\,g^7\,(a+b\,x)^3}+\frac{B\,d^4\,i^3}{120\,b^4\,(b\,c-a\,d)\,g^7\,(a+b\,x)^2}-\frac{B\,d^5\,i^3}{60\,b^4\,(b\,c-a\,d)^2\,g^7\,(a+b\,x)}-\frac{B\,d^6\,i^3\,\text{Log}[a+b\,x]}{60\,b^4\,(b\,c-a\,d)^3\,g^7}-\frac{(b\,c-a\,d)^3\,i^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,b^4\,g^7\,(a+b\,x)^6}-\frac{3\,d\,(b\,c-a\,d)^2\,i^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{5\,b^4\,g^7\,(a+b\,x)^5}-\frac{3\,d^2\,(b\,c-a\,d)\,i^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b^4\,g^7\,(a+b\,x)^4}-\frac{d^3\,i^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^4\,g^7\,(a+b\,x)^3}+\frac{B\,d^6\,i^3\,\text{Log}[c+d\,x]}{60\,b^4\,(b\,c-a\,d)^3\,g^7}$$

Problem 31: Result valid but suboptimal antiderivative.

$$\int \frac{(a\,g+b\,g\,x)^3 \left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{c\,i+d\,i\,x}\,dx$$

Optimal (type 4, 252 leaves, 6 steps):

$$\frac{g^3\,(a+b\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,d\,i}-\frac{(b\,c-a\,d)\,g^3\,(a+b\,x)^2\left(3\,A+B+3\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,d^2\,i}+\frac{(b\,c-a\,d)^2\,g^3\,(a+b\,x)\left(6\,A+5\,B+6\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,d^3\,i}+\frac{(b\,c-a\,d)^3\,g^3\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(6\,A+11\,B+6\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,d^4\,i}+\frac{B\,(b\,c-a\,d)^3\,g^3\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i}$$

Result (type 4, 408 leaves, 23 steps):

$$\frac{A b (b c-a d)^2 g^3 x}{d^3 i}+\frac{5 b B (b c-a d)^2 g^3 x}{6 d^3 i}-\frac{B (b c-a d) g^3 (a+b x)^2}{6 d^2 i}+\frac{B (b c-a d)^2 g^3 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^3 i}-\frac{(b c-a d) g^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^2 i}+\frac{g^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 d i}-\frac{11 B (b c-a d)^3 g^3 \text{Log}[c+d x]}{6 d^4 i}-\frac{B (b c-a d)^3 g^3 \text{Log}[i (c+d x)]^2}{2 d^4 i}+\frac{B (b c-a d)^3 g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c i+d i x]}{d^4 i}-\frac{(b c-a d)^3 g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c i+d i x]}{d^4 i}+\frac{B (b c-a d)^3 g^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^4 i}$$

Problem 32: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{c i+d i x} \, dx$$

Optimal (type 4, 198 leaves, 5 steps):

$$\frac{g^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d i}-\frac{(b c-a d) g^2 (a+b x) \left(2 A+B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^2 i}-\frac{(b c-a d)^2 g^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(2 A+3 B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^3 i}-\frac{B (b c-a d)^2 g^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i}$$

Result (type 4, 329 leaves, 19 steps):

$$-\frac{A b (b c-a d) g^2 x}{d^2 i}-\frac{b B (b c-a d) g^2 x}{2 d^2 i}-\frac{B (b c-a d) g^2 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^2 i}+\frac{g^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d i}+\frac{3 B (b c-a d)^2 g^2 \text{Log}[c+d x]}{2 d^3 i}+\frac{B (b c-a d)^2 g^2 \text{Log}[i (c+d x)]^2}{2 d^3 i}-\frac{B (b c-a d)^2 g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c i+d i x]}{d^3 i}+\frac{(b c-a d)^2 g^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c i+d i x]}{d^3 i}-\frac{B (b c-a d)^2 g^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i}$$

Problem 33: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{c i+d i x} \, dx$$

Optimal (type 4, 125 leaves, 4 steps):

$$\frac{g\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d\,i}+\frac{(b\,c-a\,d)\,g\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^2\,i}+\frac{B\,(b\,c-a\,d)\,g\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^2\,i}$$

Result (type 4, 213 leaves, 14 steps):

$$\frac{A\,b\,g\,x}{d\,i}+\frac{B\,g\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{d\,i}-\frac{B\,(b\,c-a\,d)\,g\,\mathrm{Log}[c+d\,x]}{d^2\,i}+\frac{B\,(b\,c-a\,d)\,g\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{d^2\,i}-\frac{(b\,c-a\,d)\,g\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]}{d^2\,i}-\frac{B\,(b\,c-a\,d)\,g\,\mathrm{Log}[c+d\,x]^2}{2\,d^2\,i}+\frac{B\,(b\,c-a\,d)\,g\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2\,i}$$

Problem 34: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{c\,i+d\,i\,x}\,dx$$

Optimal (type 4, 76 leaves, 5 steps):

$$-\frac{\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d\,i}-\frac{B\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d\,i}$$

Result (type 4, 122 leaves, 10 steps):

$$\frac{B\,\mathrm{Log}[i\,(c+d\,x)]^2}{2\,d\,i}-\frac{B\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c\,i+d\,i\,x]}{d\,i}+\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c\,i+d\,i\,x]}{d\,i}-\frac{B\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,i}$$

Problem 35: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(a\,g+b\,g\,x)\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 44 leaves, 2 steps):

$$\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,B\,(b\,c-a\,d)\,g\,i}$$

Result (type 4, 304 leaves, 20 steps):

$$-\frac{B\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)\,g\,i}+\frac{\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)\,g\,i}+\frac{B\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)\,g\,i}-\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{(b\,c-a\,d)\,g\,i}-\frac{B\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)\,g\,i}+\frac{B\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}+\frac{B\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}+\frac{B\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}$$

Problem 36: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 173 leaves, 5 steps):

$$-\frac{b\,B\,(c+d\,x)}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}+\frac{B\,d\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{2\,(b\,c-a\,d)^2\,g^2\,i}-\frac{b\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{d\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^2\,g^2\,i}$$

Result (type 4, 437 leaves, 24 steps):

$$-\frac{B}{(b\,c-a\,d)\,g^2\,i\,(a+b\,x)}-\frac{B\,d\,\text{Log}[a+b\,x]}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B\,d\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^2\,g^2\,i}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(b\,c-a\,d)\,g^2\,i\,(a+b\,x)}-\frac{d\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B\,d\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}-\frac{B\,d\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}+\frac{d\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B\,d\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^2\,g^2\,i}-\frac{B\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g^2\,i}-\frac{B\,d\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g^2\,i}-\frac{B\,d\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g^2\,i}$$

Problem 37: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 255 leaves, 7 steps):

$$-\frac{B\,(c+d\,x)^2\,\left(b-\frac{4\,d\,(a+b\,x)}{c+d\,x}\right)^2}{4\,(b\,c-a\,d)^3\,g^3\,i\,(a+b\,x)^2}-\frac{B\,d^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{2\,(b\,c-a\,d)^3\,g^3\,i}+\frac{2\,b\,d\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g^3\,i\,(a+b\,x)}-\frac{b^2\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)^3\,g^3\,i\,(a+b\,x)^2}+\frac{d^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g^3\,i}$$

Result (type 4, 535 leaves, 28 steps):

$$-\frac{B}{4\,(b\,c-a\,d)\,g^3\,i\,(a+b\,x)^2}+\frac{3\,B\,d}{2\,(b\,c-a\,d)^2\,g^3\,i\,(a+b\,x)}+\frac{3\,B\,d^2\,\text{Log}[a+b\,x]}{2\,(b\,c-a\,d)^3\,g^3\,i}-\frac{B\,d^2\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^3\,g^3\,i}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{2\,(b\,c-a\,d)\,g^3\,i\,(a+b\,x)^2}+\frac{d\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^2\,g^3\,i\,(a+b\,x)}+\frac{d^2\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g^3\,i}-\frac{3\,B\,d^2\,\text{Log}[c+d\,x]}{2\,(b\,c-a\,d)^3\,g^3\,i}+\frac{B\,d^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^3\,i}-\frac{d^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^3\,i}-\frac{B\,d^2\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^3\,g^3\,i}+\frac{B\,d^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+\frac{B\,d^2\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+\frac{B\,d^2\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}$$

Problem 38: Result unnecessarily involves higher level functions.

$$\int\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(a\,g+b\,g\,x)^4\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 373 leaves, 8 steps):

$$-\frac{3\,b\,B\,d^2\,(c+d\,x)}{(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)}+\frac{3\,b^2\,B\,d\,(c+d\,x)^2}{4\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^2}-\frac{b^3\,B\,(c+d\,x)^3}{9\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^3}+\frac{B\,d^3\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{2\,(b\,c-a\,d)^4\,g^4\,i}-\frac{3\,b\,d^2\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)}+\frac{3\,b^2\,d\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^2}-\frac{b^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^3}-\frac{d^3\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^4\,g^4\,i}$$

Result (type 4, 620 leaves, 32 steps):

$$-\frac{B}{9\,(b\,c-a\,d)\,g^4\,i\,(a+b\,x)^3}+\frac{5\,B\,d}{12\,(b\,c-a\,d)^2\,g^4\,i\,(a+b\,x)^2}-\frac{11\,B\,d^2}{6\,(b\,c-a\,d)^3\,g^4\,i\,(a+b\,x)}-$$
$$\frac{11\,B\,d^3\,\text{Log}[a+b\,x]}{6\,(b\,c-a\,d)^4\,g^4\,i}+\frac{B\,d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4\,g^4\,i}-\frac{A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{3\,(b\,c-a\,d)\,g^4\,i\,(a+b\,x)^3}+\frac{d\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)^2\,g^4\,i\,(a+b\,x)^2}-$$
$$\frac{d^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g^4\,i\,(a+b\,x)}-\frac{d^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^4\,g^4\,i}+\frac{11\,B\,d^3\,\text{Log}[c+d\,x]}{6\,(b\,c-a\,d)^4\,g^4\,i}-$$
$$\frac{B\,d^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^4\,i}+\frac{d^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^4\,i}+\frac{B\,d^3\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^4\,g^4\,i}-$$
$$\frac{B\,d^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{B\,d^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{B\,d^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}$$

Problem 39: Result valid but suboptimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 4, 341 leaves, 9 steps):

$$\frac{3\,B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)}{d^3\,i^2\,(c+d\,x)}-\frac{(6\,A+5\,B)\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)}{2\,d^3\,i^2\,(c+d\,x)}-$$
$$\frac{3\,B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{d^3\,i^2\,(c+d\,x)}+\frac{g^3\,(a+b\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,d\,i^2\,(c+d\,x)}-$$
$$\frac{(b\,c-a\,d)\,g^3\,(a+b\,x)^2\,\left(3\,A+B+3\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,d^2\,i^2\,(c+d\,x)}-$$
$$\frac{b\,(b\,c-a\,d)^2\,g^3\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(6\,A+5\,B+6\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,d^4\,i^2}-$$
$$\frac{3\,b\,B\,(b\,c-a\,d)^2\,g^3\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i^2}$$

Result (type 4, 519 leaves, 22 steps):

$$-\frac{A\,b^2\,(2\,b\,c-3\,a\,d)\,g^3\,x}{d^3\,i^2}-\frac{b^2\,B\,(b\,c-a\,d)\,g^3\,x}{2\,d^3\,i^2}-\frac{B\,(b\,c-a\,d)^3\,g^3}{d^4\,i^2\,(c+d\,x)}-\frac{a^2\,b\,B\,g^3\,\text{Log}[a+b\,x]}{2\,d^2\,i^2}-\frac{b\,B\,(b\,c-a\,d)^2\,g^3\,\text{Log}[a+b\,x]}{d^4\,i^2}-\frac{b\,B\,(2\,b\,c-3\,a\,d)\,g^3\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{d^3\,i^2}+\frac{b^3\,g^3\,x^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,d^2\,i^2}+\frac{(b\,c-a\,d)^3\,g^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^4\,i^2\,(c+d\,x)}+\frac{b^3\,B\,c^2\,g^3\,\text{Log}[c+d\,x]}{2\,d^4\,i^2}+\frac{b\,B\,(2\,b\,c-3\,a\,d)\,(b\,c-a\,d)\,g^3\,\text{Log}[c+d\,x]}{d^4\,i^2}+\frac{b\,B\,(b\,c-a\,d)^2\,g^3\,\text{Log}[c+d\,x]}{d^4\,i^2}-\frac{3\,b\,B\,(b\,c-a\,d)^2\,g^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{d^4\,i^2}+\frac{3\,b\,(b\,c-a\,d)^2\,g^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{d^4\,i^2}+\frac{3\,b\,B\,(b\,c-a\,d)^2\,g^3\,\text{Log}[c+d\,x]^2}{2\,d^4\,i^2}-\frac{3\,b\,B\,(b\,c-a\,d)^2\,g^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^2}$$

Problem 40: Result valid but suboptimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 4, 260 leaves, 8 steps):

$$-\frac{2\,B\,(b\,c-a\,d)\,g^2\,(a+b\,x)}{d^2\,i^2\,(c+d\,x)}+\frac{(2\,A+B)\,(b\,c-a\,d)\,g^2\,(a+b\,x)}{d^2\,i^2\,(c+d\,x)}+\frac{2\,B\,(b\,c-a\,d)\,g^2\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{d^2\,i^2\,(c+d\,x)}+\frac{g^2\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d\,i^2\,(c+d\,x)}+\frac{b\,(b\,c-a\,d)\,g^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(2\,A+B+2\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^3\,i^2}+\frac{2\,b\,B\,(b\,c-a\,d)\,g^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^3\,i^2}$$

Result (type 4, 336 leaves, 18 steps):

$$\frac{A\,b^2\,g^2\,x}{d^2\,i^2}+\frac{B\,(b\,c-a\,d)^2\,g^2}{d^3\,i^2\,(c+d\,x)}+\frac{b\,B\,(b\,c-a\,d)\,g^2\,\text{Log}[a+b\,x]}{d^3\,i^2}+\frac{b\,B\,g^2\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{d^2\,i^2}-\frac{(b\,c-a\,d)^2\,g^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^3\,i^2\,(c+d\,x)}-\frac{2\,b\,B\,(b\,c-a\,d)\,g^2\,\text{Log}[c+d\,x]}{d^3\,i^2}+\frac{2\,b\,B\,(b\,c-a\,d)\,g^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{d^3\,i^2}-\frac{2\,b\,(b\,c-a\,d)\,g^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{d^3\,i^2}-\frac{b\,B\,(b\,c-a\,d)\,g^2\,\text{Log}[c+d\,x]^2}{d^3\,i^2}+\frac{2\,b\,B\,(b\,c-a\,d)\,g^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}$$

Problem 41: Result valid but suboptimal antiderivative.

$$\int \frac{(a g + b g x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(c i + d i x)^2} \, dx$$

Optimal (type 4, 160 leaves, 7 steps):

$$-\frac{A g (a + b x)}{d i^2 (c + d x)} + \frac{B g (a + b x)}{d i^2 (c + d x)} - \frac{B g (a + b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d i^2 (c + d x)} - \frac{b g \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^2 i^2} - \frac{b B g \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i^2}$$

Result (type 4, 222 leaves, 15 steps):

$$-\frac{B (b c - a d) g}{d^2 i^2 (c + d x)} - \frac{b B g \operatorname{Log}[a + b x]}{d^2 i^2} + \frac{(b c - a d) g \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^2 i^2 (c + d x)} + \frac{b B g \operatorname{Log}[c + d x]}{d^2 i^2} - \frac{b B g \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c + d x]}{d^2 i^2} + \frac{b g \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c + d x]}{d^2 i^2} + \frac{b B g \operatorname{Log}[c + d x]^2}{2 d^2 i^2} - \frac{b B g \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2}$$

Problem 42: Result valid but suboptimal antiderivative.

$$\int \frac{A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(c i + d i x)^2} \, dx$$

Optimal (type 3, 98 leaves, 3 steps):

$$\frac{A (a + b x)}{(b c - a d) i^2 (c + d x)} - \frac{B (a + b x)}{(b c - a d) i^2 (c + d x)} + \frac{B (a + b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(b c - a d) i^2 (c + d x)}$$

Result (type 3, 101 leaves, 4 steps):

$$\frac{B}{d i^2 (c + d x)} + \frac{b B \operatorname{Log}[a + b x]}{d (b c - a d) i^2} - \frac{A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d i^2 (c + d x)} - \frac{b B \operatorname{Log}[c + d x]}{d (b c - a d) i^2}$$

Problem 43: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(a g + b g x) (c i + d i x)^2} \, dx$$

Optimal (type 3, 156 leaves, 5 steps):

$$-\frac{A d (a+b x)}{(b c-a d)^2 g i^2 (c+d x)}+\frac{B d (a+b x)}{(b c-a d)^2 g i^2 (c+d x)}-\frac{B d (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(b c-a d)^2 g i^2 (c+d x)}+\frac{b \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 B (b c-a d)^2 g i^2}$$

Result (type 4, 432 leaves, 24 steps):

$$-\frac{B}{(b c-a d) g i^2 (c+d x)}-\frac{b B \text{Log}[a+b x]}{(b c-a d)^2 g i^2}-\frac{b B \text{Log}[a+b x]^2}{2 (b c-a d)^2 g i^2}+\frac{A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(b c-a d) g i^2 (c+d x)}+\frac{b \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^2 g i^2}+\frac{b B \text{Log}[c+d x]}{(b c-a d)^2 g i^2}+\frac{b B \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^2 g i^2}-\frac{b \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{(b c-a d)^2 g i^2}-\frac{b B \text{Log}[c+d x]^2}{2 (b c-a d)^2 g i^2}+\frac{b B \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}+\frac{b B \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}+\frac{b B \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}$$

Problem 44: Result unnecessarily involves higher level functions.

$$\int \frac{A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(a g+b g x)^2 (c i+d i x)^2} \, dx$$

Optimal (type 3, 261 leaves, 4 steps):

$$-\frac{B d^2 (a+b x)}{(b c-a d)^3 g^2 i^2 (c+d x)}-\frac{b^2 B (c+d x)}{(b c-a d)^3 g^2 i^2 (a+b x)}+\frac{b B d \text{Log}\left[\frac{a+b x}{c+d x}\right]^2}{(b c-a d)^3 g^2 i^2}+\frac{d^2 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^2 i^2 (c+d x)}-\frac{b^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^2 i^2 (a+b x)}-\frac{2 b d \text{Log}\left[\frac{a+b x}{c+d x}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^2 i^2}$$

Result (type 4, 462 leaves, 28 steps):

$$-\frac{b B}{(b c-a d)^2 g^2 i^2 (a+b x)}+\frac{B d}{(b c-a d)^2 g^2 i^2 (c+d x)}+\frac{b B d \operatorname{Log}[a+b x]^2}{(b c-a d)^3 g^2 i^2}-\frac{b \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^2 g^2 i^2 (a+b x)}-\frac{d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^2 g^2 i^2 (c+d x)}-\frac{2 b d \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^2 i^2}-\frac{2 b B d \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d)^3 g^2 i^2}+\frac{2 b d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{(b c-a d)^3 g^2 i^2}+\frac{b B d \operatorname{Log}[c+d x]^2}{(b c-a d)^3 g^2 i^2}-\frac{2 b B d \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g^2 i^2}-\frac{2 b B d \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^3 g^2 i^2}-\frac{2 b B d \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g^2 i^2}$$

Problem 45: Result unnecessarily involves higher level functions.

$$\int \frac{A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(a g+b g x)^3 (c i+d i x)^2} \, dx$$

Optimal (type 3, 364 leaves, 8 steps):

$$\frac{B d^3 (a+b x)}{(b c-a d)^4 g^3 i^2 (c+d x)}+\frac{3 b^2 B d (c+d x)}{(b c-a d)^4 g^3 i^2 (a+b x)}-\frac{b^3 B (c+d x)^2}{4 (b c-a d)^4 g^3 i^2 (a+b x)^2}-\frac{3 b B d^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2}{2 (b c-a d)^4 g^3 i^2}-\frac{d^3 (a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^3 i^2 (c+d x)}+\frac{3 b^2 d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^3 i^2 (a+b x)}-\frac{b^3 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^4 g^3 i^2 (a+b x)^2}+\frac{3 b d^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^3 i^2}$$

Result (type 4, 630 leaves, 32 steps):

$$-\frac{b B}{4 (b c-a d)^2 g^3 i^2 (a+b x)^2}+\frac{5 b B d}{2 (b c-a d)^3 g^3 i^2 (a+b x)}-\frac{B d^2}{(b c-a d)^3 g^3 i^2 (c+d x)}+\frac{3 b B d^2 \operatorname{Log}[a+b x]}{2 (b c-a d)^4 g^3 i^2}-\frac{3 b B d^2 \operatorname{Log}[a+b x]^2}{2 (b c-a d)^4 g^3 i^2}-\frac{b \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^2 g^3 i^2 (a+b x)^2}+\frac{2 b d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^3 i^2 (a+b x)}+\frac{d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^3 i^2 (c+d x)}+\frac{3 b d^2 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^3 i^2}-\frac{3 b B d^2 \operatorname{Log}[c+d x]}{2 (b c-a d)^4 g^3 i^2}+\frac{3 b B d^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d)^4 g^3 i^2}-\frac{3 b d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{(b c-a d)^4 g^3 i^2}-\frac{3 b B d^2 \operatorname{Log}[c+d x]^2}{2 (b c-a d)^4 g^3 i^2}+\frac{3 b B d^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^4 g^3 i^2}+\frac{3 b B d^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^4 g^3 i^2}+\frac{3 b B d^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^4 g^3 i^2}$$

Problem 46: Result unnecessarily involves higher level functions.

$$\int \frac{A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(a\,g + b\,g\,x)^4\,(c\,i + d\,i\,x)^2}\,dx$$

Optimal (type 3, 457 leaves, 4 steps):

$$-\frac{B\,d^4\,(a+b\,x)}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)} - \frac{6\,b^2\,B\,d^2\,(c+d\,x)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)} + \frac{b^3\,B\,d\,(c+d\,x)^2}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^2} - \frac{b^4\,B\,(c+d\,x)^3}{9\,(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^3} + \frac{2\,b\,B\,d^3\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{(b\,c-a\,d)^5\,g^4\,i^2} + \frac{d^4\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)} - \frac{6\,b^2\,d^2\,(c+d\,x)\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)} + \frac{2\,b^3\,d\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^2} - \frac{b^4\,(c+d\,x)^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^3} - \frac{4\,b\,d^3\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2}$$

Result (type 4, 705 leaves, 36 steps):

$$-\frac{b\,B}{9\,(b\,c-a\,d)^2\,g^4\,i^2\,(a+b\,x)^3} + \frac{2\,b\,B\,d}{3\,(b\,c-a\,d)^3\,g^4\,i^2\,(a+b\,x)^2} - \frac{13\,b\,B\,d^2}{3\,(b\,c-a\,d)^4\,g^4\,i^2\,(a+b\,x)} + \frac{B\,d^3}{(b\,c-a\,d)^4\,g^4\,i^2\,(c+d\,x)} - \frac{10\,b\,B\,d^3\,\mathrm{Log}[a+b\,x]}{3\,(b\,c-a\,d)^5\,g^4\,i^2} + \frac{2\,b\,B\,d^3\,\mathrm{Log}[a+b\,x]^2}{(b\,c-a\,d)^5\,g^4\,i^2} - \frac{b\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,(b\,c-a\,d)^2\,g^4\,i^2\,(a+b\,x)^3} + \frac{b\,d\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g^4\,i^2\,(a+b\,x)^2} - \frac{3\,b\,d^2\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^4\,g^4\,i^2\,(a+b\,x)} - \frac{d^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^4\,g^4\,i^2\,(c+d\,x)} - \frac{4\,b\,d^3\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2} + \frac{10\,b\,B\,d^3\,\mathrm{Log}[c+d\,x]}{3\,(b\,c-a\,d)^5\,g^4\,i^2} - \frac{4\,b\,B\,d^3\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^5\,g^4\,i^2} + \frac{4\,b\,d^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^5\,g^4\,i^2} + \frac{2\,b\,B\,d^3\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^5\,g^4\,i^2} - \frac{4\,b\,B\,d^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^4\,i^2} - \frac{4\,b\,B\,d^3\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^4\,i^2} - \frac{4\,b\,B\,d^3\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}$$

Problem 47: Result valid but suboptimal antiderivative.

$$\int \frac{(a\,g + b\,g\,x)^3\left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(c\,i + d\,i\,x)^3}\,dx$$

Optimal (type 4, 361 leaves, 9 steps):

$$-\frac{3 B (b c-a d) g^3 (a+b x)^2}{4 d^2 i^3 (c+d x)^2}-\frac{3 b B (b c-a d) g^3 (a+b x)}{d^3 i^3 (c+d x)}+\frac{b (3 A+B) (b c-a d) g^3 (a+b x)}{d^3 i^3 (c+d x)}+\frac{3 b B (b c-a d) g^3 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^3 i^3 (c+d x)}+\frac{g^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d i^3 (c+d x)^2}+\frac{(b c-a d) g^3 (a+b x)^2 \left(3 A+B+3 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^2 i^3 (c+d x)^2}+\frac{b^2 (b c-a d) g^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(3 A+B+3 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^4 i^3}+\frac{3 b^2 B (b c-a d) g^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}$$

Result (type 4, 442 leaves, 22 steps):

$$\frac{A b^3 g^3 x}{d^3 i^3}-\frac{B (b c-a d)^3 g^3}{4 d^4 i^3 (c+d x)^2}+\frac{5 b B (b c-a d)^2 g^3}{2 d^4 i^3 (c+d x)}+\frac{5 b^2 B (b c-a d) g^3 \text{Log}[a+b x]}{2 d^4 i^3}+\frac{b^2 B g^3 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^3 i^3}+\frac{(b c-a d)^3 g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^4 i^3 (c+d x)^2}-\frac{3 b (b c-a d)^2 g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^4 i^3 (c+d x)}-\frac{7 b^2 B (b c-a d) g^3 \text{Log}[c+d x]}{2 d^4 i^3}+\frac{3 b^2 B (b c-a d) g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^4 i^3}-\frac{3 b^2 (b c-a d) g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{d^4 i^3}-\frac{3 b^2 B (b c-a d) g^3 \text{Log}[c+d x]^2}{2 d^4 i^3}+\frac{3 b^2 B (b c-a d) g^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^4 i^3}$$

Problem 48: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(c i+d i x)^3} \, dx$$

Optimal (type 4, 251 leaves, 8 steps):

$$\frac{B g^2 (a+b x)^2}{4 d i^3 (c+d x)^2}-\frac{A b g^2 (a+b x)}{d^2 i^3 (c+d x)}+\frac{b B g^2 (a+b x)}{d^2 i^3 (c+d x)}-\frac{b B g^2 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^2 i^3 (c+d x)}-\frac{g^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d i^3 (c+d x)^2}-\frac{b^2 g^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^3 i^3}-\frac{b^2 B g^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^3}$$

Result (type 4, 340 leaves, 19 steps):

$$\frac{B\,(b\,c-a\,d)^2\,g^2}{4\,d^3\,i^3\,(c+d\,x)^2}-\frac{3\,b\,B\,(b\,c-a\,d)\,g^2}{2\,d^3\,i^3\,(c+d\,x)}-\frac{3\,b^2\,B\,g^2\,\mathrm{Log}[a+b\,x]}{2\,d^3\,i^3}-\frac{(b\,c-a\,d)^2\,g^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,d^3\,i^3\,(c+d\,x)^2}+$$
$$\frac{2\,b\,(b\,c-a\,d)\,g^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^3\,i^3\,(c+d\,x)}+\frac{3\,b^2\,B\,g^2\,\mathrm{Log}[c+d\,x]}{2\,d^3\,i^3}-\frac{b^2\,B\,g^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{d^3\,i^3}+$$
$$\frac{b^2\,g^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]}{d^3\,i^3}+\frac{b^2\,B\,g^2\,\mathrm{Log}[c+d\,x]^2}{2\,d^3\,i^3}-\frac{b^2\,B\,g^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^3}$$

Problem 49: Result valid but suboptimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 3, 85 leaves, 2 steps):

$$-\frac{B\,g\,(a+b\,x)^2}{4\,(b\,c-a\,d)\,i^3\,(c+d\,x)^2}+\frac{g\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)\,i^3\,(c+d\,x)^2}$$

Result (type 3, 191 leaves, 10 steps):

$$-\frac{B\,(b\,c-a\,d)\,g}{4\,d^2\,i^3\,(c+d\,x)^2}+\frac{b\,B\,g}{2\,d^2\,i^3\,(c+d\,x)}+\frac{b^2\,B\,g\,\mathrm{Log}[a+b\,x]}{2\,d^2\,(b\,c-a\,d)\,i^3}+$$
$$\frac{(b\,c-a\,d)\,g\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,d^2\,i^3\,(c+d\,x)^2}-\frac{b\,g\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^2\,i^3\,(c+d\,x)}-\frac{b^2\,B\,g\,\mathrm{Log}[c+d\,x]}{2\,d^2\,(b\,c-a\,d)\,i^3}$$

Problem 51: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(a\,g+b\,g\,x)\,(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 3, 243 leaves, 4 steps):

$$-\frac{B\,\left(4\,b-\frac{d\,(a+b\,x)}{c+d\,x}\right)^2}{4\,(b\,c-a\,d)^3\,g\,i^3}-\frac{b^2\,B\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{2\,(b\,c-a\,d)^3\,g\,i^3}+\frac{d^2\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)^3\,g\,i^3\,(c+d\,x)^2}-$$
$$\frac{2\,b\,d\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g\,i^3\,(c+d\,x)}+\frac{b^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g\,i^3}$$

Result (type 4, 535 leaves, 28 steps):

$$-\frac{B}{4\,(b\,c-a\,d)\,g\,i^3\,(c+d\,x)^2}-\frac{3\,b\,B}{2\,(b\,c-a\,d)^2\,g\,i^3\,(c+d\,x)}-\frac{3\,b^2\,B\,\mathrm{Log}[a+b\,x]}{2\,(b\,c-a\,d)^3\,g\,i^3}-\frac{b^2\,B\,\mathrm{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^3\,g\,i^3}+\frac{A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{2\,(b\,c-a\,d)\,g\,i^3\,(c+d\,x)^2}+\frac{b\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^2\,g\,i^3\,(c+d\,x)}+\frac{b^2\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g\,i^3}+\frac{3\,b^2\,B\,\mathrm{Log}[c+d\,x]}{2\,(b\,c-a\,d)^3\,g\,i^3}+\frac{b^2\,B\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g\,i^3}-\frac{b^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g\,i^3}-\frac{b^2\,B\,\mathrm{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^3\,g\,i^3}+\frac{b^2\,B\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}+\frac{b^2\,B\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}+\frac{b^2\,B\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}$$

Problem 52: Result unnecessarily involves higher level functions.

$$\int\frac{A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 3, 365 leaves, 4 steps):

$$\frac{B\,d^3\,(a+b\,x)^2}{4\,(b\,c-a\,d)^4\,g^2\,i^3\,(c+d\,x)^2}-\frac{3\,b\,B\,d^2\,(a+b\,x)}{(b\,c-a\,d)^4\,g^2\,i^3\,(c+d\,x)}-\frac{b^3\,B\,(c+d\,x)}{(b\,c-a\,d)^4\,g^2\,i^3\,(a+b\,x)}+\frac{3\,b^2\,B\,d\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{2\,(b\,c-a\,d)^4\,g^2\,i^3}-\frac{d^3\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)^4\,g^2\,i^3\,(c+d\,x)^2}+\frac{3\,b\,d^2\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^4\,g^2\,i^3\,(c+d\,x)}-\frac{b^3\,(c+d\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^4\,g^2\,i^3\,(a+b\,x)}-\frac{3\,b^2\,d\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^4\,g^2\,i^3}$$

Result (type 4, 631 leaves, 32 steps):

$$-\frac{b^2 B}{(b c-a d)^3 g^2 i^3 (a+b x)}+\frac{B d}{4 (b c-a d)^2 g^2 i^3 (c+d x)^2}+\frac{5 b B d}{2 (b c-a d)^3 g^2 i^3 (c+d x)}+\frac{3 b^2 B d \mathrm{Log}[a+b x]}{2 (b c-a d)^4 g^2 i^3}+\frac{3 b^2 B d \mathrm{Log}[a+b x]^2}{2 (b c-a d)^4 g^2 i^3}-\frac{b^2 \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^2 i^3 (a+b x)}-\frac{d \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^2 g^2 i^3 (c+d x)^2}-\frac{2 b d \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^2 i^3 (c+d x)}-\frac{3 b^2 d \mathrm{Log}[a+b x] \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^2 i^3}-\frac{3 b^2 B d \mathrm{Log}[c+d x]}{2 (b c-a d)^4 g^2 i^3}-\frac{3 b^2 B d \mathrm{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \mathrm{Log}[c+d x]}{(b c-a d)^4 g^2 i^3}+\frac{3 b^2 d \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \mathrm{Log}[c+d x]}{(b c-a d)^4 g^2 i^3}+\frac{3 b^2 B d \mathrm{Log}[c+d x]^2}{2 (b c-a d)^4 g^2 i^3}-\frac{3 b^2 B d \mathrm{Log}[a+b x] \mathrm{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^4 g^2 i^3}-\frac{3 b^2 B d \mathrm{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^4 g^2 i^3}-\frac{3 b^2 B d \mathrm{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^4 g^2 i^3}$$

Problem 53: Result unnecessarily involves higher level functions.

$$\int \frac{A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(a g+b g x)^3 (c i+d i x)^3} \, dx$$

Optimal (type 3, 463 leaves, 5 steps):

$$-\frac{B d^4 (a+b x)^2}{4 (b c-a d)^5 g^3 i^3 (c+d x)^2}+\frac{4 b B d^3 (a+b x)}{(b c-a d)^5 g^3 i^3 (c+d x)}+\frac{4 b^3 B d (c+d x)}{(b c-a d)^5 g^3 i^3 (a+b x)}-\frac{b^4 B (c+d x)^2}{4 (b c-a d)^5 g^3 i^3 (a+b x)^2}-\frac{3 b^2 B d^2 \mathrm{Log}\left[\frac{a+b x}{c+d x}\right]^2}{(b c-a d)^5 g^3 i^3}+\frac{d^4 (a+b x)^2 \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^5 g^3 i^3 (c+d x)^2}-\frac{4 b d^3 (a+b x) \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^5 g^3 i^3 (c+d x)}+\frac{4 b^3 d (c+d x) \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^5 g^3 i^3 (a+b x)}-\frac{b^4 (c+d x)^2 \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^5 g^3 i^3 (a+b x)^2}+\frac{6 b^2 d^2 \mathrm{Log}\left[\frac{a+b x}{c+d x}\right] \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^5 g^3 i^3}$$

Result (type 4, 673 leaves, 36 steps):

$$-\frac{b^2 B}{4 (b c-a d)^3 g^3 i^3 (a+b x)^2}+\frac{7 b^2 B d}{2 (b c-a d)^4 g^3 i^3 (a+b x)}-\frac{B d^2}{4 (b c-a d)^3 g^3 i^3 (c+d x)^2}-\frac{7 b B d^2}{2 (b c-a d)^4 g^3 i^3 (c+d x)}-\frac{3 b^2 B d^2 \text{Log}[a+b x]^2}{(b c-a d)^5 g^3 i^3}-\frac{b^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^3 g^3 i^3 (a+b x)^2}+\frac{3 b^2 d \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^3 i^3 (a+b x)}+\frac{d^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^3 g^3 i^3 (c+d x)^2}+\frac{3 b d^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^3 i^3 (c+d x)}+\frac{6 b^2 d^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^5 g^3 i^3}+\frac{6 b^2 B d^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^5 g^3 i^3}-\frac{6 b^2 d^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{(b c-a d)^5 g^3 i^3}-\frac{3 b^2 B d^2 \text{Log}[c+d x]^2}{(b c-a d)^5 g^3 i^3}+\frac{6 b^2 B d^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}+\frac{6 b^2 B d^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}+\frac{6 b^2 B d^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}$$

Problem 54: Result unnecessarily involves higher level functions.

$$\int \frac{A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(a g+b g x)^4 (c i+d i x)^3} \, dx$$

Optimal (type 3, 563 leaves, 8 steps):

$$\frac{B d^5 (a+b x)^2}{4 (b c-a d)^6 g^4 i^3 (c+d x)^2}-\frac{5 b B d^4 (a+b x)}{(b c-a d)^6 g^4 i^3 (c+d x)}-\frac{10 b^3 B d^2 (c+d x)}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 B d (c+d x)^2}{4 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{b^5 B (c+d x)^3}{9 (b c-a d)^6 g^4 i^3 (a+b x)^3}+\frac{5 b^2 B d^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2}{(b c-a d)^6 g^4 i^3}-\frac{d^5 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^6 g^4 i^3 (c+d x)^2}+\frac{5 b d^4 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^6 g^4 i^3 (c+d x)}-\frac{10 b^3 d^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 d (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{b^5 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{10 b^2 d^3 \text{Log}\left[\frac{a+b x}{c+d x}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^6 g^4 i^3}$$

Result (type 4, 825 leaves, 40 steps):

$$-\frac{b^2 B}{9 (b c-a d)^3 g^4 i^3 (a+b x)^3}+\frac{11 b^2 B d}{12 (b c-a d)^4 g^4 i^3 (a+b x)^2}-\frac{47 b^2 B d^2}{6 (b c-a d)^5 g^4 i^3 (a+b x)}+$$
$$\frac{B d^3}{4 (b c-a d)^4 g^4 i^3 (c+d x)^2}+\frac{9 b B d^3}{2 (b c-a d)^5 g^4 i^3 (c+d x)}-\frac{10 b^2 B d^3 \text{Log}[a+b x]}{3 (b c-a d)^6 g^4 i^3}+$$
$$\frac{5 b^2 B d^3 \text{Log}[a+b x]^2}{(b c-a d)^6 g^4 i^3}-\frac{b^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b c-a d)^3 g^4 i^3 (a+b x)^3}+\frac{3 b^2 d \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^4 g^4 i^3 (a+b x)^2}-$$
$$\frac{6 b^2 d^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^5 g^4 i^3 (a+b x)}-\frac{d^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^4 g^4 i^3 (c+d x)^2}-\frac{4 b d^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^5 g^4 i^3 (c+d x)}-$$
$$\frac{10 b^2 d^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 B d^3 \text{Log}[c+d x]}{3 (b c-a d)^6 g^4 i^3}-$$
$$\frac{10 b^2 B d^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 d^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{(b c-a d)^6 g^4 i^3}+$$
$$\frac{5 b^2 B d^3 \text{Log}[c+d x]^2}{(b c-a d)^6 g^4 i^3}-\frac{10 b^2 B d^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}-$$
$$\frac{10 b^2 B d^3 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}-\frac{10 b^2 B d^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}$$

Problem 55: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^3 (c i+d i x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 539 leaves, 11 steps):

$$\frac{3 B^2 (b c - a d)^4 g^3 i x}{10 b d^3} - \frac{3 B^2 (b c - a d)^3 g^3 i (c + d x)^2}{20 d^4} + \frac{b B^2 (b c - a d)^2 g^3 i (c + d x)^3}{30 d^4} -$$
$$\frac{B (b c - a d)^2 g^3 i (a + b x)^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^2 d} - \frac{B (b c - a d) g^3 i (a + b x)^4 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^2} +$$
$$\frac{(b c - a d) g^3 i (a + b x)^4 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{20 b^2} + \frac{g^3 i (a + b x)^4 (c + d x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b} +$$
$$\frac{B (b c - a d)^3 g^3 i (a + b x)^2 \left(3 A + B + 3 B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 b^2 d^2} -$$
$$\frac{B (b c - a d)^4 g^3 i (a + b x) \left(6 A + 5 B + 6 B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 b^2 d^3} -$$
$$\frac{B (b c - a d)^5 g^3 i \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(6 A + 11 B + 6 B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 b^2 d^4} -$$
$$\frac{B^2 (b c - a d)^5 g^3 i \operatorname{Log}[c + d x]}{10 b^2 d^4} - \frac{B^2 (b c - a d)^5 g^3 i \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{10 b^2 d^4}$$

Result (type 4, 622 leaves, 54 steps):

$$-\frac{A B (b c - a d)^4 g^3 i x}{10 b d^3} + \frac{B^2 (b c - a d)^4 g^3 i x}{60 b d^3} - \frac{B^2 (b c - a d)^3 g^3 i (a + b x)^2}{30 b^2 d^2} +$$
$$\frac{B^2 (b c - a d)^2 g^3 i (a + b x)^3}{30 b^2 d} - \frac{B^2 (b c - a d)^4 g^3 i (a + b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{10 b^2 d^3} +$$
$$\frac{B (b c - a d)^3 g^3 i (a + b x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{20 b^2 d^2} - \frac{B (b c - a d)^2 g^3 i (a + b x)^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^2 d} -$$
$$\frac{B (b c - a d) g^3 i (a + b x)^4 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^2} + \frac{(b c - a d) g^3 i (a + b x)^4 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b^2} +$$
$$\frac{d g^3 i (a + b x)^5 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b^2} + \frac{B^2 (b c - a d)^5 g^3 i \operatorname{Log}[c + d x]}{12 b^2 d^4} -$$
$$\frac{B^2 (b c - a d)^5 g^3 i \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c + d x]}{10 b^2 d^4} + \frac{B (b c - a d)^5 g^3 i \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c + d x]}{10 b^2 d^4} +$$
$$\frac{B^2 (b c - a d)^5 g^3 i \operatorname{Log}[c + d x]^2}{20 b^2 d^4} - \frac{B^2 (b c - a d)^5 g^3 i \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{10 b^2 d^4}$$

Problem 56: Result valid but suboptimal antiderivative.

$$\int (a g + b g x)^2 (c i + d i x) \left(A + B \operatorname{Log}\left[\frac{e (a + b x)}{c + d x}\right]\right)^2 dx$$

Optimal (type 4, 450 leaves, 10 steps):

$$-\frac{B^2 (b c-a d)^3 g^2 i x}{3 b d^2}+\frac{B^2 (b c-a d)^2 g^2 i (c+d x)^2}{12 d^3}-\frac{B (b c-a d)^2 g^2 i (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{12 b^2 d}-\frac{B (b c-a d) g^2 i (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^2}+\frac{(b c-a d) g^2 i (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{12 b^2}+\frac{g^2 i (a+b x)^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b}+\frac{B (b c-a d)^3 g^2 i (a+b x) \left(2 A+B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{12 b^2 d^2}+\frac{B (b c-a d)^4 g^2 i \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(2 A+3 B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{12 b^2 d^3}+\frac{B^2 (b c-a d)^4 g^2 i \text{Log}[c+d x]}{6 b^2 d^3}+\frac{B^2 (b c-a d)^4 g^2 i \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{6 b^2 d^3}$$

Result (type 4, 537 leaves, 46 steps):

$$\frac{A B (b c-a d)^3 g^2 i x}{6 b d^2}-\frac{B^2 (b c-a d)^3 g^2 i x}{12 b d^2}+\frac{B^2 (b c-a d)^2 g^2 i (a+b x)^2}{12 b^2 d}+\frac{B^2 (b c-a d)^3 g^2 i (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{6 b^2 d^2}-\frac{B (b c-a d)^2 g^2 i (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{12 b^2 d}-\frac{B (b c-a d) g^2 i (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^2}+\frac{(b c-a d) g^2 i (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b^2}+\frac{d g^2 i (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b^2}-\frac{B^2 (b c-a d)^4 g^2 i \text{Log}[c+d x]}{12 b^2 d^3}+\frac{B^2 (b c-a d)^4 g^2 i \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{6 b^2 d^3}-\frac{B (b c-a d)^4 g^2 i \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{6 b^2 d^3}-\frac{B^2 (b c-a d)^4 g^2 i \text{Log}[c+d x]^2}{12 b^2 d^3}+\frac{B^2 (b c-a d)^4 g^2 i \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{6 b^2 d^3}$$

Problem 57: Result valid but suboptimal antiderivative.

$$\int (a g+b g x) (c i+d i x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 343 leaves, 9 steps):

$$\frac{B^2 (b c - a d)^2 g i x}{3 b d} - \frac{B (b c - a d)^2 g i (a + b x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^2 d} -$$

$$\frac{B (b c - a d) g i (a + b x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^2} +$$

$$\frac{(b c - a d) g i (a + b x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{6 b^2} + \frac{g i (a + b x)^2 (c + d x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b} -$$

$$\frac{B (b c - a d)^3 g i \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A + B + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^2 d^2} -$$

$$\frac{B^2 (b c - a d)^3 g i \text{Log}[c + d x]}{3 b^2 d^2} - \frac{B^2 (b c - a d)^3 g i \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{3 b^2 d^2}$$

Result (type 4, 1214 leaves, 78 steps) :

$$-\frac{2}{3} A b B \left(\frac{a^2}{b^2}-\frac{c^2}{d^2}\right) d g i x+\frac{B^2 (b c-a d)^2 g i x}{3 b d}-\frac{A B (b c-a d) (b c+a d) g i x}{b d}+$$
$$\frac{a^2 B^2 (b c-a d) g i \operatorname{Log}[a+b x]}{3 b^2}-\frac{a^2 B^2 c g i \operatorname{Log}[a+b x]^2}{b}-\frac{a^3 B^2 d g i \operatorname{Log}[a+b x]^2}{3 b^2}+$$
$$\frac{a^2 B^2 (b c+a d) g i \operatorname{Log}[a+b x]^2}{2 b^2}-\frac{B^2 (b c-a d) (b c+a d) g i (a+b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{3 b^2 d}-$$
$$\frac{1}{3} B (b c-a d) g i x^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)+\frac{2 a^2 B c g i \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b}+$$
$$\frac{2 a^3 B d g i \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^2}-\frac{a^2 B (b c+a d) g i \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^2}+$$
$$a c g i x \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2+\frac{1}{2} (b c+a d) g i x^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2+$$
$$\frac{1}{3} b d g i x^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2-\frac{B^2 c^2 (b c-a d) g i \operatorname{Log}[c+d x]}{3 d^2}+$$
$$\frac{B^2 (b c-a d)^2 (b c+a d) g i \operatorname{Log}[c+d x]}{3 b^2 d^2}+\frac{2 b B^2 c^3 g i \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{3 d^2}+$$
$$\frac{2 a B^2 c^2 g i \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d}-\frac{B^2 c^2 (b c+a d) g i \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d^2}-$$
$$\frac{2 b B c^3 g i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{3 d^2}-\frac{2 a B c^2 g i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{d}+$$
$$\frac{B c^2 (b c+a d) g i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{d^2}-\frac{b B^2 c^3 g i \operatorname{Log}[c+d x]^2}{3 d^2}-$$
$$\frac{a B^2 c^2 g i \operatorname{Log}[c+d x]^2}{d}+\frac{B^2 c^2 (b c+a d) g i \operatorname{Log}[c+d x]^2}{2 d^2}+\frac{2 a^2 B^2 c g i \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b}+$$
$$\frac{2 a^3 B^2 d g i \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b^2}-\frac{a^2 B^2 (b c+a d) g i \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2}+$$
$$\frac{2 a^2 B^2 c g i \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b}+\frac{2 a^3 B^2 d g i \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 b^2}-$$
$$\frac{a^2 B^2 (b c+a d) g i \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^2}+\frac{2 b B^2 c^3 g i \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 d^2}+$$
$$\frac{2 a B^2 c^2 g i \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d}-\frac{B^2 c^2 (b c+a d) g i \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2}$$

Problem 58: Result valid but suboptimal antiderivative.

$$\int (c i+d i x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 203 leaves, 7 steps):

$$-\frac{B\,(b\,c-a\,d)\,i\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2}+\frac{i\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,d}+\frac{B^2\,(b\,c-a\,d)^2\,i\,\mathrm{Log}[c+d\,x]}{b^2\,d}+\frac{B\,(b\,c-a\,d)^2\,i\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,d}-\frac{B^2\,(b\,c-a\,d)^2\,i\,\mathrm{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,d}$$

Result (type 4, 283 leaves, 16 steps):

$$-\frac{A\,B\,(b\,c-a\,d)\,i\,x}{b}+\frac{B^2\,(b\,c-a\,d)^2\,i\,\mathrm{Log}[a+b\,x]^2}{2\,b^2\,d}-\frac{B^2\,(b\,c-a\,d)\,i\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b^2}-\frac{B\,(b\,c-a\,d)^2\,i\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,d}+\frac{i\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,d}+\frac{B^2\,(b\,c-a\,d)^2\,i\,\mathrm{Log}[c+d\,x]}{b^2\,d}-\frac{B^2\,(b\,c-a\,d)^2\,i\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,d}-\frac{B^2\,(b\,c-a\,d)^2\,i\,\mathrm{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^2\,d}$$

Problem 59: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 286 leaves, 8 steps):

$$\frac{2\,B\,(b\,c-a\,d)\,i\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g}+\frac{d\,i\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^2\,g}-\frac{(b\,c-a\,d)\,i\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g}+\frac{2\,B^2\,(b\,c-a\,d)\,i\,\mathrm{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^2\,g}+\frac{2\,B\,(b\,c-a\,d)\,i\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g}+\frac{2\,B^2\,(b\,c-a\,d)\,i\,\mathrm{PolyLog}\left[3,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g}$$

Result (type 4, 644 leaves, 39 steps):

$$-\frac{a B^2 d i \operatorname{Log}[a+b x]^2}{b^2 g}-\frac{A B (b c-a d) i \operatorname{Log}[a+b x]^2}{b^2 g}-$$
$$\frac{B^2 (b c-a d) i \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{b^2 g}-\frac{B^2 (b c-a d) i \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{b^2 g}+$$
$$\frac{2 a B d i \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^2 g}+\frac{d i x \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b g}+$$
$$\frac{(b c-a d) i \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^2 g}+\frac{2 B^2 c i \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{b g}-$$
$$\frac{2 B c i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{b g}-\frac{B^2 c i \operatorname{Log}[c+d x]^2}{b g}+\frac{2 a B^2 d i \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2 g}+$$
$$\frac{2 A B (b c-a d) i \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2 g}+\frac{2 a B^2 d i \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^2 g}+$$
$$\frac{2 A B (b c-a d) i \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^2 g}+\frac{2 B^2 c i \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b g}+$$
$$\frac{2 B^2 (b c-a d) i \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{b^2 g}+\frac{2 B^2 (b c-a d) i \operatorname{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{b^2 g}$$

Problem 60: Result valid but suboptimal antiderivative.

$$\int \frac{(c i+d i x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^2} \, dx$$

Optimal (type 4, 241 leaves, 7 steps):

$$-\frac{2 B^2 i (c+d x)}{b g^2 (a+b x)}-\frac{2 B i (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b g^2 (a+b x)}-$$
$$\frac{i (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b g^2 (a+b x)}-\frac{d i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^2 g^2}+$$
$$\frac{2 B d i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^2 g^2}+\frac{2 B^2 d i \operatorname{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b^2 g^2}$$

Result (type 4, 705 leaves, 43 steps):

$$-\frac{2\,B^2\,(b\,c-a\,d)\,i}{b^2\,g^2\,(a+b\,x)}-\frac{2\,B^2\,d\,i\,\text{Log}[a+b\,x]}{b^2\,g^2}-\frac{A\,B\,d\,i\,\text{Log}[a+b\,x]^2}{b^2\,g^2}+\frac{B^2\,d\,i\,\text{Log}[a+b\,x]^2}{b^2\,g^2}-$$

$$\frac{B^2\,d\,i\,\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2}{b^2\,g^2}-\frac{B^2\,d\,i\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2}{b^2\,g^2}-$$

$$\frac{2\,B\,(b\,c-a\,d)\,i\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g^2\,(a+b\,x)}-\frac{2\,B\,d\,i\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g^2}-$$

$$\frac{(b\,c-a\,d)\,i\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^2\,g^2\,(a+b\,x)}+\frac{d\,i\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^2\,g^2}+\frac{2\,B^2\,d\,i\,\text{Log}[c+d\,x]}{b^2\,g^2}-$$

$$\frac{2\,B^2\,d\,i\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{b^2\,g^2}+\frac{2\,B\,d\,i\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{b^2\,g^2}+$$

$$\frac{B^2\,d\,i\,\text{Log}[c+d\,x]^2}{b^2\,g^2}+\frac{2\,A\,B\,d\,i\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,g^2}-\frac{2\,B^2\,d\,i\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,g^2}+$$

$$\frac{2\,A\,B\,d\,i\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^2\,g^2}-\frac{2\,B^2\,d\,i\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^2\,g^2}-\frac{2\,B^2\,d\,i\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,g^2}+$$

$$\frac{2\,B^2\,d\,i\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b^2\,g^2}+\frac{2\,B^2\,d\,i\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b^2\,g^2}$$

Problem 61: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 3, 141 leaves, 3 steps):

$$-\frac{B^2\,i\,(c+d\,x)^2}{4\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2}-\frac{B\,i\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2}-\frac{i\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2}$$

Result (type 4, 639 leaves, 58 steps):

$$-\frac{B^2 (b c-a d) i}{4 b^2 g^3 (a+b x)^2}-\frac{B^2 d i}{2 b^2 g^3 (a+b x)}-\frac{B^2 d^2 i \text{Log}[a+b x]}{2 b^2 (b c-a d) g^3}+$$
$$\frac{B^2 d^2 i \text{Log}[a+b x]^2}{2 b^2 (b c-a d) g^3}-\frac{B (b c-a d) i \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^2 g^3 (a+b x)^2}-\frac{B d i \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^2 g^3 (a+b x)}-$$
$$\frac{B d^2 i \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^2 (b c-a d) g^3}-\frac{(b c-a d) i \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^2 g^3 (a+b x)^2}-$$
$$\frac{d i \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^2 g^3 (a+b x)}+\frac{B^2 d^2 i \text{Log}[c+d x]}{2 b^2 (b c-a d) g^3}-\frac{B^2 d^2 i \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^2 (b c-a d) g^3}+$$
$$\frac{B d^2 i \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{b^2 (b c-a d) g^3}+\frac{B^2 d^2 i \text{Log}[c+d x]^2}{2 b^2 (b c-a d) g^3}-$$
$$\frac{B^2 d^2 i \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2 (b c-a d) g^3}-\frac{B^2 d^2 i \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^2 (b c-a d) g^3}-\frac{B^2 d^2 i \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^2 (b c-a d) g^3}$$

Problem 62: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^4} \, dx$$

Optimal (type 3, 287 leaves, 7 steps):

$$\frac{B^2 d i (c+d x)^2}{4 (b c-a d)^2 g^4 (a+b x)^2}-\frac{2 b B^2 i (c+d x)^3}{27 (b c-a d)^2 g^4 (a+b x)^3}+$$
$$\frac{B d i (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^2 g^4 (a+b x)^2}-\frac{2 b B i (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{9 (b c-a d)^2 g^4 (a+b x)^3}+$$
$$\frac{d i (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^2 g^4 (a+b x)^2}-\frac{b i (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 (b c-a d)^2 g^4 (a+b x)^3}$$

Result (type 4, 741 leaves, 66 steps):

$$-\frac{2 B^2 (b c-a d) i}{27 b^2 g^4 (a+b x)^3}+\frac{B^2 d i}{36 b^2 g^4 (a+b x)^2}+\frac{5 B^2 d^2 i}{18 b^2 (b c-a d) g^4 (a+b x)}+\frac{5 B^2 d^3 i \operatorname{Log}[a+b x]}{18 b^2 (b c-a d)^2 g^4}-$$
$$\frac{B^2 d^3 i \operatorname{Log}[a+b x]^2}{6 b^2 (b c-a d)^2 g^4}-\frac{2 B (b c-a d) i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{9 b^2 g^4 (a+b x)^3}-\frac{B d i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^2 g^4 (a+b x)^2}+$$
$$\frac{B d^2 i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^2 (b c-a d) g^4 (a+b x)}+\frac{B d^3 i \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^2 (b c-a d)^2 g^4}-$$
$$\frac{(b c-a d) i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b^2 g^4 (a+b x)^3}-\frac{d i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^2 g^4 (a+b x)^2}-\frac{5 B^2 d^3 i \operatorname{Log}[c+d x]}{18 b^2 (b c-a d)^2 g^4}+$$
$$\frac{B^2 d^3 i \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{3 b^2 (b c-a d)^2 g^4}-\frac{B d^3 i \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{3 b^2 (b c-a d)^2 g^4}-\frac{B^2 d^3 i \operatorname{Log}[c+d x]^2}{6 b^2 (b c-a d)^2 g^4}+$$
$$\frac{B^2 d^3 i \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b^2 (b c-a d)^2 g^4}+\frac{B^2 d^3 i \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 b^2 (b c-a d)^2 g^4}+\frac{B^2 d^3 i \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 b^2 (b c-a d)^2 g^4}$$

Problem 63: Result unnecessarily involves higher level functions.

$$\int \frac{(c i+d i x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^5} \, dx$$

Optimal (type 3, 445 leaves, 9 steps):

$$-\frac{B^2 d^2 i (c+d x)^2}{4 (b c-a d)^3 g^5 (a+b x)^2}+\frac{4 b B^2 d i (c+d x)^3}{27 (b c-a d)^3 g^5 (a+b x)^3}-\frac{b^2 B^2 i (c+d x)^4}{32 (b c-a d)^3 g^5 (a+b x)^4}-$$
$$\frac{B d^2 i (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^3 g^5 (a+b x)^2}+\frac{4 b B d i (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{9 (b c-a d)^3 g^5 (a+b x)^3}-$$
$$\frac{b^2 B i (c+d x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{8 (b c-a d)^3 g^5 (a+b x)^4}-\frac{d^2 i (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^3 g^5 (a+b x)^2}+$$
$$\frac{2 b d i (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 (b c-a d)^3 g^5 (a+b x)^3}-\frac{b^2 i (c+d x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 (b c-a d)^3 g^5 (a+b x)^4}$$

Result (type 4, 826 leaves, 74 steps):

$$-\frac{B^2\,(b\,c-a\,d)\,i}{32\,b^2\,g^5\,(a+b\,x)^4}+\frac{5\,B^2\,d\,i}{216\,b^2\,g^5\,(a+b\,x)^3}+\frac{B^2\,d^2\,i}{144\,b^2\,(b\,c-a\,d)\,g^5\,(a+b\,x)^2}-$$
$$\frac{13\,B^2\,d^3\,i}{72\,b^2\,(b\,c-a\,d)^2\,g^5\,(a+b\,x)}-\frac{13\,B^2\,d^4\,i\,\text{Log}[a+b\,x]}{72\,b^2\,(b\,c-a\,d)^3\,g^5}+\frac{B^2\,d^4\,i\,\text{Log}[a+b\,x]^2}{12\,b^2\,(b\,c-a\,d)^3\,g^5}-$$
$$\frac{B\,(b\,c-a\,d)\,i\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{8\,b^2\,g^5\,(a+b\,x)^4}-\frac{B\,d\,i\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{18\,b^2\,g^5\,(a+b\,x)^3}+\frac{B\,d^2\,i\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{12\,b^2\,(b\,c-a\,d)\,g^5\,(a+b\,x)^2}-$$
$$\frac{B\,d^3\,i\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,b^2\,(b\,c-a\,d)^2\,g^5\,(a+b\,x)}-\frac{B\,d^4\,i\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,b^2\,(b\,c-a\,d)^3\,g^5}-$$
$$\frac{(b\,c-a\,d)\,i\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,b^2\,g^5\,(a+b\,x)^4}-\frac{d\,i\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,b^2\,g^5\,(a+b\,x)^3}+\frac{13\,B^2\,d^4\,i\,\text{Log}[c+d\,x]}{72\,b^2\,(b\,c-a\,d)^3\,g^5}-$$
$$\frac{B^2\,d^4\,i\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{6\,b^2\,(b\,c-a\,d)^3\,g^5}+\frac{B\,d^4\,i\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{6\,b^2\,(b\,c-a\,d)^3\,g^5}+\frac{B^2\,d^4\,i\,\text{Log}[c+d\,x]^2}{12\,b^2\,(b\,c-a\,d)^3\,g^5}-$$
$$\frac{B^2\,d^4\,i\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{6\,b^2\,(b\,c-a\,d)^3\,g^5}-\frac{B^2\,d^4\,i\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{6\,b^2\,(b\,c-a\,d)^3\,g^5}-\frac{B^2\,d^4\,i\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{6\,b^2\,(b\,c-a\,d)^3\,g^5}$$

Problem 64: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,dx$$

Optimal (type 4, 711 leaves, 17 steps):

$$\frac{3 B^2 (b c - a d)^5 g^3 i^2 x}{20 b^2 d^3} + \frac{B^2 (b c - a d)^2 g^3 i^2 (a + b x)^4}{60 b^3} - \frac{3 B^2 (b c - a d)^4 g^3 i^2 (c + d x)^2}{40 b d^4} +$$

$$\frac{B^2 (b c - a d)^3 g^3 i^2 (c + d x)^3}{60 d^4} - \frac{B (b c - a d)^3 g^3 i^2 (a + b x)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{90 b^3 d} -$$

$$\frac{B (b c - a d)^2 g^3 i^2 (a + b x)^4 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{20 b^3} -$$

$$\frac{B (b c - a d) g^3 i^2 (a + b x)^4 (c + d x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{15 b^2} +$$

$$\frac{(b c - a d)^2 g^3 i^2 (a + b x)^4 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{60 b^3} +$$

$$\frac{(b c - a d) g^3 i^2 (a + b x)^4 (c + d x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{15 b^2} +$$

$$\frac{g^3 i^2 (a + b x)^4 (c + d x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{6 b} +$$

$$\frac{B (b c - a d)^4 g^3 i^2 (a + b x)^2 \left(3 A + B + 3 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{180 b^3 d^2} -$$

$$\frac{B (b c - a d)^5 g^3 i^2 (a + b x) \left(6 A + 5 B + 6 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{180 b^3 d^3} -$$

$$\frac{B (b c - a d)^6 g^3 i^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(6 A + 11 B + 6 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{180 b^3 d^4} -$$

$$\frac{B^2 (b c - a d)^6 g^3 i^2 \text{Log}[c + d x]}{20 b^3 d^4} - \frac{B^2 (b c - a d)^6 g^3 i^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{30 b^3 d^4}$$

Result (type 4, 790 leaves, 86 steps):

$$-\frac{A B (b c-a d)^5 g^3 i^2 x}{30 b^2 d^3}+\frac{B^2 (b c-a d)^5 g^3 i^2 x}{45 b^2 d^3}-\frac{7 B^2 (b c-a d)^4 g^3 i^2 (a+b x)^2}{360 b^3 d^2}+$$
$$\frac{B^2 (b c-a d)^3 g^3 i^2 (a+b x)^3}{60 b^3 d}+\frac{B^2 (b c-a d)^2 g^3 i^2 (a+b x)^4}{60 b^3}-$$
$$\frac{B^2 (b c-a d)^5 g^3 i^2 (a+b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{30 b^3 d^3}+\frac{B (b c-a d)^4 g^3 i^2 (a+b x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 b^3 d^2}-$$
$$\frac{B (b c-a d)^3 g^3 i^2 (a+b x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{90 b^3 d}-$$
$$\frac{7 B (b c-a d)^2 g^3 i^2 (a+b x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 b^3}-$$
$$\frac{B d (b c-a d) g^3 i^2 (a+b x)^5 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{15 b^3}+$$
$$\frac{(b c-a d)^2 g^3 i^2 (a+b x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b^3}+$$
$$\frac{2 d (b c-a d) g^3 i^2 (a+b x)^5 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b^3}+\frac{d^2 g^3 i^2 (a+b x)^6 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{6 b^3}+$$
$$\frac{B^2 (b c-a d)^6 g^3 i^2 \operatorname{Log}[c+d x]}{90 b^3 d^4}-\frac{B^2 (b c-a d)^6 g^3 i^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{30 b^3 d^4}+$$
$$\frac{B (b c-a d)^6 g^3 i^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{30 b^3 d^4}+$$
$$\frac{B^2 (b c-a d)^6 g^3 i^2 \operatorname{Log}[c+d x]^2}{60 b^3 d^4}-\frac{B^2 (b c-a d)^6 g^3 i^2 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{30 b^3 d^4}$$

Problem 65: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^2 (c i+d i x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 761 leaves, 15 steps):

$$-\frac{B^2 (b c-a d)^4 g^2 i^2 x}{10 b^2 d^2}-\frac{B^2 (b c-a d)^3 g^2 i^2 (c+d x)^2}{20 b d^3}+\frac{B^2 (b c-a d)^2 g^2 i^2 (c+d x)^3}{30 d^3}+$$
$$\frac{B^2 (b c-a d)^5 g^2 i^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{30 b^3 d^3}-\frac{B (b c-a d)^3 g^2 i^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^3 d}-$$
$$\frac{B (b c-a d)^2 g^2 i^2 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{15 b^3}-$$
$$\frac{B (b c-a d)^3 g^2 i^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{5 b d^3}+$$
$$\frac{4 B (b c-a d)^2 g^2 i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{15 d^3}-$$
$$\frac{b B (b c-a d) g^2 i^2 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 d^3}+$$
$$\frac{(b c-a d)^2 g^2 i^2 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{30 b^3}+$$
$$\frac{(b c-a d) g^2 i^2 (a+b x)^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{10 b^2}+$$
$$\frac{g^2 i^2 (a+b x)^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b}+$$
$$\frac{B (b c-a d)^4 g^2 i^2 (a+b x) \left(2 A+B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^3 d^2}+$$
$$\frac{B (b c-a d)^5 g^2 i^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(2 A+3 B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^3 d^3}+$$
$$\frac{B^2 (b c-a d)^5 g^2 i^2 \text{Log}[c+d x]}{10 b^3 d^3}+\frac{B^2 (b c-a d)^5 g^2 i^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{15 b^3 d^3}$$

Result (type 4, 666 leaves, 74 steps):

$$\frac{A B (b c-a d)^4 g^2 i^2 x}{15 b^2 d^2}-\frac{B^2 (b c-a d)^4 g^2 i^2 x}{15 b^2 d^2}+\frac{B^2 (b c-a d)^3 g^2 i^2 (a+b x)^2}{20 b^3 d}+$$
$$\frac{B^2 (b c-a d)^2 g^2 i^2 (a+b x)^3}{30 b^3}+\frac{B^2 (b c-a d)^4 g^2 i^2 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{15 b^3 d^2}-$$
$$\frac{B (b c-a d)^3 g^2 i^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^3 d}-$$
$$\frac{B (b c-a d)^2 g^2 i^2 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{5 b^3}-$$
$$\frac{B d (b c-a d) g^2 i^2 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^3}+$$
$$\frac{(b c-a d)^2 g^2 i^2 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b^3}+$$
$$\frac{d (b c-a d) g^2 i^2 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^3}+$$
$$\frac{d^2 g^2 i^2 (a+b x)^5 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b^3}+\frac{B^2 (b c-a d)^5 g^2 i^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{15 b^3 d^3}-$$
$$\frac{B (b c-a d)^5 g^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{15 b^3 d^3}-$$
$$\frac{B^2 (b c-a d)^5 g^2 i^2 \text{Log}[c+d x]^2}{30 b^3 d^3}+\frac{B^2 (b c-a d)^5 g^2 i^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{15 b^3 d^3}$$

Problem 66: Result valid but suboptimal antiderivative.

$$\int (a g+b g x) (c i+d i x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 589 leaves, 14 steps):

$$\frac{B^2 (b c-a d)^3 g i^2 x}{12 b^2 d}+\frac{B^2 (b c-a d)^2 g i^2 (c+d x)^2}{12 b d^2}-$$
$$\frac{B^2 (b c-a d)^4 g i^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^3 d^2}-\frac{B (b c-a d)^3 g i^2 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^3 d}-$$
$$\frac{B (b c-a d)^2 g i^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^3}+\frac{B (b c-a d)^2 g i^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 b d^2}-$$
$$\frac{B (b c-a d) g i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 d^2}+\frac{(b c-a d)^2 g i^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{12 b^3}+$$
$$\frac{(b c-a d) g i^2 (a+b x)^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{6 b^2}+$$
$$\frac{g i^2 (a+b x)^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b}-$$
$$\frac{B (b c-a d)^4 g i^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^3 d^2}-$$
$$\frac{B^2 (b c-a d)^4 g i^2 \text{Log}[c+d x]}{4 b^3 d^2}-\frac{B^2 (b c-a d)^4 g i^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{6 b^3 d^2}$$

Result (type 4, 570 leaves, 46 steps):

$$\frac{A B (b c-a d)^3 g i^2 x}{6 b^2 d}+\frac{B^2 (b c-a d)^3 g i^2 x}{12 b^2 d}+$$
$$\frac{B^2 (b c-a d)^2 g i^2 (c+d x)^2}{12 b d^2}+\frac{B^2 (b c-a d)^4 g i^2 \text{Log}[a+b x]}{12 b^3 d^2}-$$
$$\frac{B^2 (b c-a d)^4 g i^2 \text{Log}[a+b x]^2}{12 b^3 d^2}+\frac{B^2 (b c-a d)^3 g i^2 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{6 b^3 d}+$$
$$\frac{B (b c-a d)^2 g i^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{12 b d^2}-\frac{B (b c-a d) g i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 d^2}+$$
$$\frac{B (b c-a d)^4 g i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^3 d^2}-$$
$$\frac{(b c-a d) g i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 d^2}+$$
$$\frac{b g i^2 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 d^2}-\frac{B^2 (b c-a d)^4 g i^2 \text{Log}[c+d x]}{6 b^3 d^2}+$$
$$\frac{B^2 (b c-a d)^4 g i^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{6 b^3 d^2}+\frac{B^2 (b c-a d)^4 g i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{6 b^3 d^2}$$

Problem 67: Result valid but suboptimal antiderivative.

$$\int (c\,i + d\,i\,x)^2 \left(A + B \,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2 dx$$

Optimal (type 4, 334 leaves, 11 steps):

$$\frac{B^2\,(b\,c-a\,d)^2\,i^2\,x}{3\,b^2} + \frac{B^2\,(b\,c-a\,d)^3\,i^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{3\,b^3\,d} - \frac{2\,B\,(b\,c-a\,d)^2\,i^2\,(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^3} - \frac{B\,(b\,c-a\,d)\,i^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,d} + \frac{i^2\,(c+d\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,d} + \frac{B^2\,(b\,c-a\,d)^3\,i^2\,\text{Log}[c+d\,x]}{b^3\,d} + \frac{2\,B\,(b\,c-a\,d)^3\,i^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{3\,b^3\,d} - \frac{2\,B^2\,(b\,c-a\,d)^3\,i^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{3\,b^3\,d}$$

Result (type 4, 420 leaves, 20 steps):

$$-\frac{2\,A\,B\,(b\,c-a\,d)^2\,i^2\,x}{3\,b^2} + \frac{B^2\,(b\,c-a\,d)^2\,i^2\,x}{3\,b^2} + \frac{B^2\,(b\,c-a\,d)^3\,i^2\,\text{Log}[a+b\,x]}{3\,b^3\,d} + \frac{B^2\,(b\,c-a\,d)^3\,i^2\,\text{Log}[a+b\,x]^2}{3\,b^3\,d} - \frac{2\,B^2\,(b\,c-a\,d)^2\,i^2\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{3\,b^3} - \frac{B\,(b\,c-a\,d)\,i^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,d} - \frac{2\,B\,(b\,c-a\,d)^3\,i^2\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^3\,d} + \frac{i^2\,(c+d\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,d} + \frac{2\,B^2\,(b\,c-a\,d)^3\,i^2\,\text{Log}[c+d\,x]}{3\,b^3\,d} - \frac{2\,B^2\,(b\,c-a\,d)^3\,i^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b^3\,d} - \frac{2\,B^2\,(b\,c-a\,d)^3\,i^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,b^3\,d}$$

Problem 68: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 535 leaves, 15 steps):

$$-\frac{B\,d\,(b\,c-a\,d)\,i^2\,(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g}+\frac{2\,B\,(b\,c-a\,d)^2\,i^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g}+\frac{d\,(b\,c-a\,d)\,i^2\,(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^3\,g}+\frac{i^2\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,b\,g}+\frac{B^2\,(b\,c-a\,d)^2\,i^2\,\text{Log}[c+d\,x]}{b^3\,g}+\frac{B\,(b\,c-a\,d)^2\,i^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}-\frac{(b\,c-a\,d)^2\,i^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}+\frac{2\,B^2\,(b\,c-a\,d)^2\,i^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^3\,g}-\frac{B^2\,(b\,c-a\,d)^2\,i^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}+\frac{2\,B\,(b\,c-a\,d)^2\,i^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}+\frac{2\,B^2\,(b\,c-a\,d)^2\,i^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}$$

Result (type 4, 1676 leaves, 86 steps):

$$-\frac{A\,B\,d\,(b\,c-a\,d)\,i^2\,x}{b^2\,g}-\frac{a\,B^2\,d\,(b\,c-a\,d)\,i^2\,\text{Log}[a+b\,x]^2}{b^3\,g}+\frac{B^2\,(b\,c-a\,d)^2\,i^2\,\text{Log}[a+b\,x]^2}{2\,b^3\,g}-\frac{A\,B\,(b\,c-a\,d)^2\,i^2\,\text{Log}[g\,(a+b\,x)]^2}{b^3\,g}+\frac{B^2\,(b\,c-a\,d)^2\,i^2\,\text{Log}[g\,(a+b\,x)]^3}{3\,b^3\,g}-\frac{B^2\,(b\,c-a\,d)^2\,i^2\,\text{Log}[a+b\,x]^2\,\text{Log}[-c-d\,x]}{b^3\,g}+\frac{2\,B^2\,(b\,c-a\,d)^2\,i^2\,\text{Log}[a+b\,x]\,\text{Log}[g\,(a+b\,x)]\,\text{Log}[-c-d\,x]}{b^3\,g}-\frac{B^2\,(b\,c-a\,d)^2\,i^2\,\text{Log}[g\,(a+b\,x)]^2\,\text{Log}[-c-d\,x]}{b^3\,g}+\frac{B^2\,(b\,c-a\,d)^2\,i^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[\frac{1}{c+d\,x}\right]^2}{b^3\,g}-\frac{B^2\,(b\,c-a\,d)^2\,i^2\,\text{Log}[g\,(a+b\,x)]\,\text{Log}\left[\frac{1}{c+d\,x}\right]^2}{b^3\,g}-\frac{B^2\,d\,(b\,c-a\,d)\,i^2\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b^3\,g}+\frac{2\,a\,B\,d\,(b\,c-a\,d)\,i^2\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g}-\frac{B\,(b\,c-a\,d)^2\,i^2\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g}+\frac{d\,(b\,c-a\,d)\,i^2\,x\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^2\,g}+\frac{i^2\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,b\,g}+$$

$$\frac{B^2 (b c-a d)^2 i^2 \text{Log}[c+d x]}{b^3 g}+\frac{2 B^2 c (b c-a d) i^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^2 g}-$$
$$\frac{2 B c (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{b^2 g}-\frac{B^2 c (b c-a d) i^2 \text{Log}[c+d x]^2}{b^2 g}+$$
$$\frac{2 a B^2 d (b c-a d) i^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}-\frac{B^2 (b c-a d)^2 i^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}+$$
$$\frac{B^2 (b c-a d)^2 i^2 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}+\frac{B^2 (b c-a d)^2 i^2 \text{Log}[g (a+b x)]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}+$$
$$\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \text{Log}[a g+b g x]}{b^3 g}+$$
$$\frac{2 A B (b c-a d)^2 i^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}[a g+b g x]}{b^3 g}-\frac{1}{b^3 g}$$
$$2 B^2 (b c-a d)^2 i^2 \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}[a g+b g x]-$$
$$\frac{B^2 (b c-a d)^2 i^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[a g+b g x]^2}{b^3 g}-\frac{B^2 (b c-a d)^2 i^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}[a g+b g x]^2}{b^3 g}+$$
$$\frac{2 a B^2 d (b c-a d) i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g}+\frac{2 A B (b c-a d)^2 i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g}-$$
$$\frac{B^2 (b c-a d)^2 i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g}+\frac{2 B^2 (b c-a d)^2 i^2 \text{Log}[a+b x] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g}-$$
$$\frac{1}{b^3 g} 2 B^2 (b c-a d)^2 i^2 \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]+$$
$$\frac{2 B^2 c (b c-a d) i^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^2 g}-\frac{2 B^2 (b c-a d)^2 i^2 \text{Log}\left[\frac{1}{c+d x}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}-$$
$$\frac{2 B^2 (b c-a d)^2 i^2 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g}-\frac{2 B^2 (b c-a d)^2 i^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}$$

Problem 69: Result valid but suboptimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^2} \, dx$$

Optimal (type 4, 442 leaves, 11 steps):

$$-\frac{2 B^2 (b c-a d) i^2 (c+d x)}{b^2 g^2 (a+b x)}-\frac{2 B (b c-a d) i^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^2 g^2 (a+b x)}+$$

$$\frac{2 B d (b c-a d) i^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^2}+$$

$$\frac{d^2 i^2 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^2}-\frac{(b c-a d) i^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^2 g^2 (a+b x)}-$$

$$\frac{2 d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^2}+\frac{2 B^2 d (b c-a d) i^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^3 g^2}+$$

$$\frac{4 B d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^2}+$$

$$\frac{4 B^2 d (b c-a d) i^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^2}$$

Result (type 4, 1219 leaves, 65 steps):

$$-\frac{2 B^2 (b c-a d)^2 i^2}{b^3 g^2 (a+b x)}-\frac{2 B^2 d (b c-a d) i^2 \text{Log}[a+b x]}{b^3 g^2}-\frac{a B^2 d^2 i^2 \text{Log}[a+b x]^2}{b^3 g^2}-$$

$$\frac{2 A B d (b c-a d) i^2 \text{Log}[a+b x]^2}{b^3 g^2}+\frac{B^2 d (b c-a d) i^2 \text{Log}[a+b x]^2}{b^3 g^2}-$$

$$\frac{2 B^2 d (b c-a d) i^2 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{b^3 g^2}-\frac{2 B^2 d (b c-a d) i^2 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{b^3 g^2}-$$

$$\frac{2 B (b c-a d)^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^2 (a+b x)}+\frac{2 a B d^2 i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^2}-$$

$$\frac{2 B d (b c-a d) i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^2}+\frac{d^2 i^2 x \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^2 g^2}-$$

$$\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^2 (a+b x)}+\frac{2 d (b c-a d) i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^2}+$$

$$\frac{2 B^2 d (b c-a d) i^2 \text{Log}[c+d x]}{b^3 g^2}+\frac{2 B^2 c d i^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^2 g^2}-$$

$$\frac{2 B^2 d (b c-a d) i^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^3 g^2}-\frac{2 B c d i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{b^2 g^2}+$$

$$\frac{2 B d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{b^3 g^2}-\frac{B^2 c d i^2 \text{Log}[c+d x]^2}{b^2 g^2}+$$

$$\frac{B^2 d (b c-a d) i^2 \text{Log}[c+d x]^2}{b^3 g^2}+\frac{2 a B^2 d^2 i^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^2}+$$

$$\frac{4 A B d (b c-a d) i^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^2}-$$

$$\frac{2 B^2 d (b c-a d) i^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^2}+\frac{2 a B^2 d^2 i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g^2}+$$

$$\frac{4 A B d (b c-a d) i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g^2}-\frac{2 B^2 d (b c-a d) i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g^2}+$$

$$\frac{2 B^2 c d i^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^2 g^2}-\frac{2 B^2 d (b c-a d) i^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^2}+$$

$$\frac{4 B^2 d (b c-a d) i^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{b^3 g^2}+$$

$$\frac{4 B^2 d (b c-a d) i^2 \text{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{b^3 g^2}$$

Problem 70: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^2 \left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 4, 387 leaves, 10 steps):

$$-\frac{2\,B^2\,d\,i^2\,(c+d\,x)}{b^2\,g^3\,(a+b\,x)}-\frac{B^2\,i^2\,(c+d\,x)^2}{4\,b\,g^3\,(a+b\,x)^2}-\frac{2\,B\,d\,i^2\,(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^2\,g^3\,(a+b\,x)}-$$
$$\frac{B\,i^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b\,g^3\,(a+b\,x)^2}-\frac{d\,i^2\,(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^2\,g^3\,(a+b\,x)}-$$
$$\frac{i^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,b\,g^3\,(a+b\,x)^2}-\frac{d^2\,i^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}+$$
$$\frac{2\,B\,d^2\,i^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}+\frac{2\,B^2\,d^2\,i^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}$$

Result (type 4, 932 leaves, 73 steps):

$$-\frac{B^2 (b c-a d)^2 i^2}{4 b^3 g^3 (a+b x)^2}-\frac{5 B^2 d (b c-a d) i^2}{2 b^3 g^3 (a+b x)}-\frac{5 B^2 d^2 i^2 \text{Log}[a+b x]}{2 b^3 g^3}-$$
$$\frac{A B d^2 i^2 \text{Log}[a+b x]^2}{b^3 g^3}+\frac{3 B^2 d^2 i^2 \text{Log}[a+b x]^2}{2 b^3 g^3}-\frac{B^2 d^2 i^2 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{b^3 g^3}-$$
$$\frac{B^2 d^2 i^2 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{b^3 g^3}-\frac{B (b c-a d)^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^3 g^3 (a+b x)^2}-$$
$$\frac{3 B d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^3 (a+b x)}-\frac{3 B d^2 i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^3}-$$
$$\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^3 g^3 (a+b x)^2}-\frac{2 d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^3 (a+b x)}+$$
$$\frac{d^2 i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^3}+\frac{5 B^2 d^2 i^2 \text{Log}[c+d x]}{2 b^3 g^3}-$$
$$\frac{3 B^2 d^2 i^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^3 g^3}+\frac{3 B d^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{b^3 g^3}+$$
$$\frac{3 B^2 d^2 i^2 \text{Log}[c+d x]^2}{2 b^3 g^3}+\frac{2 A B d^2 i^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^3}-$$
$$\frac{3 B^2 d^2 i^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^3}+\frac{2 A B d^2 i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g^3}-$$
$$\frac{3 B^2 d^2 i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g^3}-\frac{3 B^2 d^2 i^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^3}+$$
$$\frac{2 B^2 d^2 i^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{b^3 g^3}+\frac{2 B^2 d^2 i^2 \text{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{b^3 g^3}$$

Problem 71: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^4} \, dx$$

Optimal (type 3, 147 leaves, 3 steps):

$$-\frac{2 B^2 i^2 (c+d x)^3}{27 (b c-a d) g^4 (a+b x)^3}-$$
$$\frac{2 B i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{9 (b c-a d) g^4 (a+b x)^3}-\frac{i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 (b c-a d) g^4 (a+b x)^3}$$

Result (type 4, 827 leaves, 92 steps):

$$-\frac{2 B^2 (b c-a d)^2 i^2}{27 b^3 g^4 (a+b x)^3}-\frac{2 B^2 d (b c-a d) i^2}{9 b^3 g^4 (a+b x)^2}-\frac{2 B^2 d^2 i^2}{9 b^3 g^4 (a+b x)}-$$

$$\frac{2 B^2 d^3 i^2 \text{Log}[a+b x]}{9 b^3 (b c-a d) g^4}+\frac{B^2 d^3 i^2 \text{Log}[a+b x]^2}{3 b^3 (b c-a d) g^4}-\frac{2 B (b c-a d)^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{9 b^3 g^4 (a+b x)^3}-$$

$$\frac{2 B d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^3 g^4 (a+b x)^2}-\frac{2 B d^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^3 g^4 (a+b x)}-$$

$$\frac{2 B d^3 i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^3 (b c-a d) g^4}-\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b^3 g^4 (a+b x)^3}-$$

$$\frac{d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^4 (a+b x)^2}-\frac{d^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^4 (a+b x)}+\frac{2 B^2 d^3 i^2 \text{Log}[c+d x]}{9 b^3 (b c-a d) g^4}-$$

$$\frac{2 B^2 d^3 i^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 b^3 (b c-a d) g^4}+\frac{2 B d^3 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{3 b^3 (b c-a d) g^4}+$$

$$\frac{B^2 d^3 i^2 \text{Log}[c+d x]^2}{3 b^3 (b c-a d) g^4}-\frac{2 B^2 d^3 i^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b^3 (b c-a d) g^4}-$$

$$\frac{2 B^2 d^3 i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 b^3 (b c-a d) g^4}-\frac{2 B^2 d^3 i^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 b^3 (b c-a d) g^4}$$

Problem 72: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^5} \, dx$$

Optimal (type 3, 299 leaves, 7 steps):

$$\frac{2 B^2 d i^2 (c+d x)^3}{27 (b c-a d)^2 g^5 (a+b x)^3}-\frac{b B^2 i^2 (c+d x)^4}{32 (b c-a d)^2 g^5 (a+b x)^4}+$$

$$\frac{2 B d i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{9 (b c-a d)^2 g^5 (a+b x)^3}-\frac{b B i^2 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{8 (b c-a d)^2 g^5 (a+b x)^4}+$$

$$\frac{d i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 (b c-a d)^2 g^5 (a+b x)^3}-\frac{b i^2 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 (b c-a d)^2 g^5 (a+b x)^4}$$

Result (type 4, 920 leaves, 104 steps):

$$-\frac{B^2 (b c-a d)^2 i^2}{32 b^3 g^5 (a+b x)^4}-\frac{11 B^2 d (b c-a d) i^2}{216 b^3 g^5 (a+b x)^3}+\frac{5 B^2 d^2 i^2}{144 b^3 g^5 (a+b x)^2}+\frac{7 B^2 d^3 i^2}{72 b^3 (b c-a d) g^5 (a+b x)}+$$
$$\frac{7 B^2 d^4 i^2 \text{Log}[a+b x]}{72 b^3 (b c-a d)^2 g^5}-\frac{B^2 d^4 i^2 \text{Log}[a+b x]^2}{12 b^3 (b c-a d)^2 g^5}-\frac{B (b c-a d)^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{8 b^3 g^5 (a+b x)^4}-$$
$$\frac{5 B d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{18 b^3 g^5 (a+b x)^3}-\frac{B d^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{12 b^3 g^5 (a+b x)^2}+$$
$$\frac{B d^3 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^3 (b c-a d) g^5 (a+b x)}+\frac{B d^4 i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^3 (b c-a d)^2 g^5}-$$
$$\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b^3 g^5 (a+b x)^4}-\frac{2 d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b^3 g^5 (a+b x)^3}-$$
$$\frac{d^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^3 g^5 (a+b x)^2}-\frac{7 B^2 d^4 i^2 \text{Log}[c+d x]}{72 b^3 (b c-a d)^2 g^5}+\frac{B^2 d^4 i^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{6 b^3 (b c-a d)^2 g^5}-$$
$$\frac{B d^4 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{6 b^3 (b c-a d)^2 g^5}-\frac{B^2 d^4 i^2 \text{Log}[c+d x]^2}{12 b^3 (b c-a d)^2 g^5}+$$
$$\frac{B^2 d^4 i^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{6 b^3 (b c-a d)^2 g^5}+\frac{B^2 d^4 i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{6 b^3 (b c-a d)^2 g^5}+\frac{B^2 d^4 i^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{6 b^3 (b c-a d)^2 g^5}$$

Problem 73: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^6} \, dx$$

Optimal (type 3, 463 leaves, 9 steps):

$$-\frac{2 B^2 d^2 i^2 (c+d x)^3}{27 (b c-a d)^3 g^6 (a+b x)^3}+\frac{b B^2 d i^2 (c+d x)^4}{16 (b c-a d)^3 g^6 (a+b x)^4}-\frac{2 b^2 B^2 i^2 (c+d x)^5}{125 (b c-a d)^3 g^6 (a+b x)^5}-$$
$$\frac{2 B d^2 i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{9 (b c-a d)^3 g^6 (a+b x)^3}+\frac{b B d i^2 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 (b c-a d)^3 g^6 (a+b x)^4}-$$
$$\frac{2 b^2 B i^2 (c+d x)^5 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{25 (b c-a d)^3 g^6 (a+b x)^5}-\frac{d^2 i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 (b c-a d)^3 g^6 (a+b x)^3}+$$
$$\frac{b d i^2 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^3 g^6 (a+b x)^4}-\frac{b^2 i^2 (c+d x)^5 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 (b c-a d)^3 g^6 (a+b x)^5}$$

Result (type 4, 1009 leaves, 116 steps):

$$-\frac{2 B^2 (b c-a d)^2 i^2}{125 b^3 g^6 (a+b x)^5}-\frac{7 B^2 d (b c-a d) i^2}{400 b^3 g^6 (a+b x)^4}+\frac{43 B^2 d^2 i^2}{2700 b^3 g^6 (a+b x)^3}-\frac{13 B^2 d^3 i^2}{1800 b^3 (b c-a d) g^6 (a+b x)^2}-$$
$$\frac{47 B^2 d^4 i^2}{900 b^3 (b c-a d)^2 g^6 (a+b x)}-\frac{47 B^2 d^5 i^2 \text{Log}[a+b x]}{900 b^3 (b c-a d)^3 g^6}+\frac{B^2 d^5 i^2 \text{Log}[a+b x]^2}{30 b^3 (b c-a d)^3 g^6}-$$
$$\frac{2 B (b c-a d)^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{25 b^3 g^6 (a+b x)^5}-\frac{3 B d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{20 b^3 g^6 (a+b x)^4}-$$
$$\frac{B d^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{45 b^3 g^6 (a+b x)^3}+\frac{B d^3 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^3 (b c-a d) g^6 (a+b x)^2}-$$
$$\frac{B d^4 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{15 b^3 (b c-a d)^2 g^6 (a+b x)}-\frac{B d^5 i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{15 b^3 (b c-a d)^3 g^6}-$$
$$\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b^3 g^6 (a+b x)^5}-\frac{d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^3 g^6 (a+b x)^4}-$$
$$\frac{d^2 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b^3 g^6 (a+b x)^3}+\frac{47 B^2 d^5 i^2 \text{Log}[c+d x]}{900 b^3 (b c-a d)^3 g^6}-\frac{B^2 d^5 i^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{15 b^3 (b c-a d)^3 g^6}+$$
$$\frac{B d^5 i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{15 b^3 (b c-a d)^3 g^6}+\frac{B^2 d^5 i^2 \text{Log}[c+d x]^2}{30 b^3 (b c-a d)^3 g^6}-$$
$$\frac{B^2 d^5 i^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{15 b^3 (b c-a d)^3 g^6}-\frac{B^2 d^5 i^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{15 b^3 (b c-a d)^3 g^6}-\frac{B^2 d^5 i^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{15 b^3 (b c-a d)^3 g^6}$$

Problem 74: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^3 (c i+d i x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 1089 leaves, 22 steps):

$$\frac{5 B^2 (b c-a d)^6 g^3 i^3 x}{84 b^3 d^3}+\frac{B^2 (b c-a d)^3 g^3 i^3 (a+b x)^4}{140 b^4}-\frac{29 B^2 (b c-a d)^5 g^3 i^3 (c+d x)^2}{840 b^2 d^4}+$$
$$\frac{47 B^2 (b c-a d)^4 g^3 i^3 (c+d x)^3}{1260 b d^4}-\frac{13 B^2 (b c-a d)^3 g^3 i^3 (c+d x)^4}{420 d^4}+\frac{b B^2 (b c-a d)^2 g^3 i^3 (c+d x)^5}{105 d^4}-$$
$$\frac{B^2 (b c-a d)^7 g^3 i^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{210 b^4 d^4}-\frac{B (b c-a d)^4 g^3 i^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{210 b^4 d}-$$
$$\frac{3 B (b c-a d)^3 g^3 i^3 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{140 b^4}-$$
$$\frac{B (b c-a d)^2 g^3 i^3 (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{35 b^3}+$$
$$\frac{2 B (b c-a d)^4 g^3 i^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{21 b d^4}-$$
$$\frac{3 B (b c-a d)^3 g^3 i^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{14 d^4}+$$
$$\frac{6 b B (b c-a d)^2 g^3 i^3 (c+d x)^5 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{35 d^4}-$$
$$\frac{b^2 B (b c-a d) g^3 i^3 (c+d x)^6 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{21 d^4}+$$
$$\frac{(b c-a d)^3 g^3 i^3 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{140 b^4}+$$
$$\frac{(b c-a d)^2 g^3 i^3 (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{35 b^3}+$$
$$\frac{(b c-a d) g^3 i^3 (a+b x)^4 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{14 b^2}+$$
$$\frac{g^3 i^3 (a+b x)^4 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{7 b}+$$
$$\frac{B (b c-a d)^5 g^3 i^3 (a+b x)^2 \left(3 A+B+3 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{420 b^4 d^2}-$$
$$\frac{B (b c-a d)^6 g^3 i^3 (a+b x) \left(6 A+5 B+6 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{420 b^4 d^3}-$$
$$\frac{B (b c-a d)^7 g^3 i^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(6 A+11 B+6 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{420 b^4 d^4}-$$
$$\frac{11 B^2 (b c-a d)^7 g^3 i^3 \text{Log}[c+d x]}{420 b^4 d^4}-\frac{B^2 (b c-a d)^7 g^3 i^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{70 b^4 d^4}$$

Result (type 4, 896 leaves, 122 steps) :

$$-\frac{A B (b c-a d)^6 g^3 i^3 x}{70 b^3 d^3}+\frac{B^2 (b c-a d)^6 g^3 i^3 x}{70 b^3 d^3}-\frac{3 B^2 (b c-a d)^5 g^3 i^3 (a+b x)^2}{280 b^4 d^2}+$$

$$\frac{11 B^2 (b c-a d)^4 g^3 i^3 (a+b x)^3}{1260 b^4 d}+\frac{B^2 (b c-a d)^3 g^3 i^3 (a+b x)^4}{42 b^4}+\frac{B^2 d (b c-a d)^2 g^3 i^3 (a+b x)^5}{105 b^4}-$$

$$\frac{B^2 (b c-a d)^6 g^3 i^3 (a+b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{70 b^4 d^3}+\frac{B (b c-a d)^5 g^3 i^3 (a+b x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{140 b^4 d^2}-$$

$$\frac{B (b c-a d)^4 g^3 i^3 (a+b x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{210 b^4 d}-$$

$$\frac{17 B (b c-a d)^3 g^3 i^3 (a+b x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{140 b^4}-$$

$$\frac{B d (b c-a d)^2 g^3 i^3 (a+b x)^5 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{7 b^4}-$$

$$\frac{B d^2 (b c-a d) g^3 i^3 (a+b x)^6 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{21 b^4}+$$

$$\frac{(b c-a d)^3 g^3 i^3 (a+b x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b^4}+$$

$$\frac{3 d (b c-a d)^2 g^3 i^3 (a+b x)^5 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b^4}+$$

$$\frac{d^2 (b c-a d) g^3 i^3 (a+b x)^6 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^4}+$$

$$\frac{d^3 g^3 i^3 (a+b x)^7 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{7 b^4}-\frac{B^2 (b c-a d)^7 g^3 i^3 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{70 b^4 d^4}+$$

$$\frac{B (b c-a d)^7 g^3 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{70 b^4 d^4}+$$

$$\frac{B^2 (b c-a d)^7 g^3 i^3 \operatorname{Log}[c+d x]^2}{140 b^4 d^4}-\frac{B^2 (b c-a d)^7 g^3 i^3 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{70 b^4 d^4}$$

Problem 75: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^2 (c i+d i x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 908 leaves, 20 steps):

$$-\frac{7 B^2 (b c-a d)^5 g^2 i^3 x}{180 b^3 d^2}-\frac{7 B^2 (b c-a d)^4 g^2 i^3 (c+d x)^2}{360 b^2 d^3}-\frac{B^2 (b c-a d)^3 g^2 i^3 (c+d x)^3}{60 b d^3}+\frac{B^2 (b c-a d)^2 g^2 i^3 (c+d x)^4}{60 d^3}+\frac{B^2 (b c-a d)^6 g^2 i^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{36 b^4 d^3}-\frac{B (b c-a d)^4 g^2 i^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 b^4 d}-\frac{B (b c-a d)^3 g^2 i^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^4}-\frac{B (b c-a d)^4 g^2 i^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^2 d^3}+\frac{B (b c-a d)^3 g^2 i^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{45 b d^3}+\frac{7 B (b c-a d)^2 g^2 i^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 d^3}-\frac{b B (b c-a d) g^2 i^3 (c+d x)^5 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{15 d^3}+\frac{(b c-a d)^3 g^2 i^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{60 b^4}+\frac{(b c-a d)^2 g^2 i^3 (a+b x)^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{20 b^3}+\frac{(b c-a d) g^2 i^3 (a+b x)^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{10 b^2}+\frac{g^2 i^3 (a+b x)^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{6 b}+\frac{B (b c-a d)^5 g^2 i^3 (a+b x) \left(2 A+B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 b^4 d^2}+\frac{B (b c-a d)^6 g^2 i^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(2 A+3 B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 b^4 d^3}+\frac{11 B^2 (b c-a d)^6 g^2 i^3 \text{Log}[c+d x]}{180 b^4 d^3}+\frac{B^2 (b c-a d)^6 g^2 i^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{30 b^4 d^3}$$

Result (type 4, 825 leaves, 86 steps) :

$$-\frac{A B (b c-a d)^5 g^2 i^3 x}{30 b^3 d^2}-\frac{B^2 (b c-a d)^5 g^2 i^3 x}{45 b^3 d^2}-\frac{7 B^2 (b c-a d)^4 g^2 i^3 (c+d x)^2}{360 b^2 d^3}-$$
$$\frac{B^2 (b c-a d)^3 g^2 i^3 (c+d x)^3}{60 b d^3}+\frac{B^2 (b c-a d)^2 g^2 i^3 (c+d x)^4}{60 d^3}-$$
$$\frac{B^2 (b c-a d)^6 g^2 i^3 \text{Log}[a+b x]}{45 b^4 d^3}+\frac{B^2 (b c-a d)^6 g^2 i^3 \text{Log}[a+b x]^2}{60 b^4 d^3}-$$
$$\frac{B^2 (b c-a d)^5 g^2 i^3 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{30 b^4 d^2}-\frac{B (b c-a d)^4 g^2 i^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 b^2 d^3}-$$
$$\frac{B (b c-a d)^3 g^2 i^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{90 b d^3}+$$
$$\frac{7 B (b c-a d)^2 g^2 i^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 d^3}-$$
$$\frac{b B (b c-a d) g^2 i^3 (c+d x)^5 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{15 d^3}-$$
$$\frac{B (b c-a d)^6 g^2 i^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^4 d^3}+$$
$$\frac{(b c-a d)^2 g^2 i^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 d^3}-$$
$$\frac{2 b (b c-a d) g^2 i^3 (c+d x)^5 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 d^3}+$$
$$\frac{b^2 g^2 i^3 (c+d x)^6 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{6 d^3}+\frac{B^2 (b c-a d)^6 g^2 i^3 \text{Log}[c+d x]}{30 b^4 d^3}-$$
$$\frac{B^2 (b c-a d)^6 g^2 i^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{30 b^4 d^3}-\frac{B^2 (b c-a d)^6 g^2 i^3 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{30 b^4 d^3}$$

Problem 76: Result valid but suboptimal antiderivative.

$$\int (a g+b g x) (c i+d i x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 730 leaves, 19 steps) :

$$\frac{B^2 (b c - a d)^4 g i^3 x}{60 b^3 d} + \frac{B^2 (b c - a d)^3 g i^3 (c + d x)^2}{30 b^2 d^2} + \frac{B^2 (b c - a d)^2 g i^3 (c + d x)^3}{30 b d^2} -$$
$$\frac{B^2 (b c - a d)^5 g i^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^4 d^2} - \frac{B (b c - a d)^4 g i^3 (a + b x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^4 d} -$$
$$\frac{B (b c - a d)^3 g i^3 (a + b x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^4} +$$
$$\frac{3 B (b c - a d)^3 g i^3 (c + d x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{20 b^2 d^2} +$$
$$\frac{B (b c - a d)^2 g i^3 (c + d x)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b d^2} -$$
$$\frac{B (b c - a d) g i^3 (c + d x)^4 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 d^2} + \frac{(b c - a d)^3 g i^3 (a + b x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{20 b^4} +$$
$$\frac{(b c - a d)^2 g i^3 (a + b x)^2 (c + d x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{10 b^3} +$$
$$\frac{3 (b c - a d) g i^3 (a + b x)^2 (c + d x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{20 b^2} +$$
$$\frac{g i^3 (a + b x)^2 (c + d x)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b} -$$
$$\frac{B (b c - a d)^5 g i^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A + B + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^4 d^2} -$$
$$\frac{11 B^2 (b c - a d)^5 g i^3 \text{Log}[c + d x]}{60 b^4 d^2} - \frac{B^2 (b c - a d)^5 g i^3 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{10 b^4 d^2}$$

Result (type 4, 655 leaves, 54 steps) :

$$\frac{A B (b c-a d)^4 g i^3 x}{10 b^3 d}+\frac{B^2 (b c-a d)^4 g i^3 x}{60 b^3 d}+\frac{B^2 (b c-a d)^3 g i^3 (c+d x)^2}{30 b^2 d^2}+$$
$$\frac{B^2 (b c-a d)^2 g i^3 (c+d x)^3}{30 b d^2}+\frac{B^2 (b c-a d)^5 g i^3 \text{Log}[a+b x]}{60 b^4 d^2}-\frac{B^2 (b c-a d)^5 g i^3 \text{Log}[a+b x]^2}{20 b^4 d^2}+$$
$$\frac{B^2 (b c-a d)^4 g i^3 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{10 b^4 d}+\frac{B (b c-a d)^3 g i^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{20 b^2 d^2}+$$
$$\frac{B (b c-a d)^2 g i^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b d^2}-\frac{B (b c-a d) g i^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 d^2}+$$
$$\frac{B (b c-a d)^5 g i^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^4 d^2}-$$
$$\frac{(b c-a d) g i^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 d^2}+$$
$$\frac{b g i^3 (c+d x)^5 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 d^2}-\frac{B^2 (b c-a d)^5 g i^3 \text{Log}[c+d x]}{10 b^4 d^2}+$$
$$\frac{B^2 (b c-a d)^5 g i^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{10 b^4 d^2}+\frac{B^2 (b c-a d)^5 g i^3 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{10 b^4 d^2}$$

Problem 77: Result valid but suboptimal antiderivative.

$$\int (c i+d i x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 420 leaves, 15 steps):

$$\frac{5 B^2 (b c-a d)^3 i^3 x}{12 b^3}+\frac{B^2 (b c-a d)^2 i^3 (c+d x)^2}{12 b^2 d}+$$
$$\frac{5 B^2 (b c-a d)^4 i^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^4 d}-\frac{B (b c-a d)^3 i^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^4}-$$
$$\frac{B (b c-a d)^2 i^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 b^2 d}-\frac{B (b c-a d) i^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b d}+$$
$$\frac{i^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 d}+\frac{11 B^2 (b c-a d)^4 i^3 \text{Log}[c+d x]}{12 b^4 d}+$$
$$\frac{B (b c-a d)^4 i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{2 b^4 d}-\frac{B^2 (b c-a d)^4 i^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{2 b^4 d}$$

Result (type 4, 503 leaves, 24 steps):

$$-\frac{A\,B\,(b\,c-a\,d)^3\,i^3\,x}{2\,b^3}+\frac{5\,B^2\,(b\,c-a\,d)^3\,i^3\,x}{12\,b^3}+\frac{B^2\,(b\,c-a\,d)^2\,i^3\,(c+d\,x)^2}{12\,b^2\,d}+$$
$$\frac{5\,B^2\,(b\,c-a\,d)^4\,i^3\,\text{Log}[a+b\,x]}{12\,b^4\,d}+\frac{B^2\,(b\,c-a\,d)^4\,i^3\,\text{Log}[a+b\,x]^2}{4\,b^4\,d}-$$
$$\frac{B^2\,(b\,c-a\,d)^3\,i^3\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{2\,b^4}-\frac{B\,(b\,c-a\,d)^2\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b^2\,d}-$$
$$\frac{B\,(b\,c-a\,d)\,i^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,b\,d}-\frac{B\,(b\,c-a\,d)^4\,i^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^4\,d}+$$
$$\frac{i^3\,(c+d\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,d}+\frac{B^2\,(b\,c-a\,d)^4\,i^3\,\text{Log}[c+d\,x]}{2\,b^4\,d}-$$
$$\frac{B^2\,(b\,c-a\,d)^4\,i^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{2\,b^4\,d}-\frac{B^2\,(b\,c-a\,d)^4\,i^3\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{2\,b^4\,d}$$

Problem 78: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 712 leaves, 26 steps):

$$\frac{B^2 d (b c - a d)^2 i^3 x}{3 b^3 g} + \frac{B^2 (b c - a d)^3 i^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^4 g} - \frac{5 B d (b c - a d)^2 i^3 (a + b x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^4 g} - \frac{B (b c - a d) i^3 (c + d x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^2 g} + \frac{2 B (b c - a d)^3 i^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g} + \frac{d (b c - a d)^2 i^3 (a + b x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^4 g} + \frac{(b c - a d) i^3 (c + d x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^2 g} + \frac{i^3 (c + d x)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b g} + \frac{2 B^2 (b c - a d)^3 i^3 \text{Log}[c + d x]}{b^4 g} + \frac{5 B (b c - a d)^3 i^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{3 b^4 g} - \frac{(b c - a d)^3 i^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \text{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g} + \frac{2 B^2 (b c - a d)^3 i^3 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b^4 g} - \frac{5 B^2 (b c - a d)^3 i^3 \text{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{3 b^4 g} + \frac{2 B (b c - a d)^3 i^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g} + \frac{2 B^2 (b c - a d)^3 i^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g}$$

Result (type 4, 1868 leaves, 106 steps):

$$-\frac{5 A B d (b c - a d)^2 i^3 x}{3 b^3 g} + \frac{B^2 d (b c - a d)^2 i^3 x}{3 b^3 g} + \frac{B^2 (b c - a d)^3 i^3 \text{Log}[a + b x]}{3 b^4 g} - \frac{a B^2 d (b c - a d)^2 i^3 \text{Log}[a + b x]^2}{b^4 g} + \frac{5 B^2 (b c - a d)^3 i^3 \text{Log}[a + b x]^2}{6 b^4 g} - \frac{A B (b c - a d)^3 i^3 \text{Log}[g (a + b x)]^2}{b^4 g} + \frac{B^2 (b c - a d)^3 i^3 \text{Log}[g (a + b x)]^3}{3 b^4 g} - \frac{B^2 (b c - a d)^3 i^3 \text{Log}[a + b x]^2 \text{Log}[-c - d x]}{b^4 g} + \frac{2 B^2 (b c - a d)^3 i^3 \text{Log}[a + b x] \text{Log}[g (a + b x)] \text{Log}[-c - d x]}{b^4 g} - \frac{B^2 (b c - a d)^3 i^3 \text{Log}[g (a + b x)]^2 \text{Log}[-c - d x]}{b^4 g} + \frac{B^2 (b c - a d)^3 i^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[\frac{1}{c+d x}\right]^2}{b^4 g} - \frac{B^2 (b c - a d)^3 i^3 \text{Log}[g (a + b x)] \text{Log}\left[\frac{1}{c+d x}\right]^2}{b^4 g} -$$

$$\frac{5\,B^2\,d\,(b\,c-a\,d)^2\,i^3\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{3\,b^4\,g}-\frac{B\,(b\,c-a\,d)\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^2\,g}+$$

$$\frac{2\,a\,B\,d\,(b\,c-a\,d)^2\,i^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g}-$$

$$\frac{5\,B\,(b\,c-a\,d)^3\,i^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^4\,g}+\frac{d\,(b\,c-a\,d)^2\,i^3\,x\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^3\,g}+$$

$$\frac{(b\,c-a\,d)\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,b^2\,g}+\frac{i^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,b\,g}+$$

$$\frac{5\,B^2\,(b\,c-a\,d)^3\,i^3\,\text{Log}[c+d\,x]}{3\,b^4\,g}+\frac{2\,B^2\,c\,(b\,c-a\,d)^2\,i^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{b^3\,g}-$$

$$\frac{2\,B\,c\,(b\,c-a\,d)^2\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{b^3\,g}-\frac{B^2\,c\,(b\,c-a\,d)^2\,i^3\,\text{Log}[c+d\,x]^2}{b^3\,g}+$$

$$\frac{2\,a\,B^2\,d\,(b\,c-a\,d)^2\,i^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g}-\frac{5\,B^2\,(b\,c-a\,d)^3\,i^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b^4\,g}+$$

$$\frac{B^2\,(b\,c-a\,d)^3\,i^3\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g}+\frac{B^2\,(b\,c-a\,d)^3\,i^3\,\text{Log}[g\,(a+b\,x)]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g}+$$

$$\frac{(b\,c-a\,d)^3\,i^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}[a\,g+b\,g\,x]}{b^4\,g}+$$

$$\frac{2\,A\,B\,(b\,c-a\,d)^3\,i^3\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]}{b^4\,g}-\frac{1}{b^4\,g}$$

$$2\,B^2\,(b\,c-a\,d)^3\,i^3\,\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]-$$

$$\frac{B^2\,(b\,c-a\,d)^3\,i^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b^4\,g}-\frac{B^2\,(b\,c-a\,d)^3\,i^3\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b^4\,g}+$$

$$\frac{2\,a\,B^2\,d\,(b\,c-a\,d)^2\,i^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g}+\frac{2\,A\,B\,(b\,c-a\,d)^3\,i^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g}-$$

$$\frac{5\,B^2\,(b\,c-a\,d)^3\,i^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,b^4\,g}+\frac{2\,B^2\,(b\,c-a\,d)^3\,i^3\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g}-$$

$$\frac{1}{b^4\,g}2\,B^2\,(b\,c-a\,d)^3\,i^3\,\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]+$$

$$\frac{2\,B^2\,c\,(b\,c-a\,d)^2\,i^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^3\,g}-\frac{2\,B^2\,(b\,c-a\,d)^3\,i^3\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g}-$$

$$\frac{2\,B^2\,(b\,c-a\,d)^3\,i^3\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g}-\frac{2\,B^2\,(b\,c-a\,d)^3\,i^3\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g}$$

Problem 79: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i + d\,i\,x)^3 \left(A + B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g + b\,g\,x)^2}\,dx$$

Optimal (type 4, 692 leaves, 17 steps):

$$-\frac{2\,B^2\,(b\,c - a\,d)^2\,i^3\,(c + d\,x)}{b^3\,g^2\,(a + b\,x)} - \frac{B\,d^2\,(b\,c - a\,d)\,i^3\,(a + b\,x)\,\left(A + B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^2} - \frac{2\,B\,(b\,c - a\,d)^2\,i^3\,(c + d\,x)\,\left(A + B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g^2\,(a + b\,x)} + \frac{4\,B\,d\,(b\,c - a\,d)^2\,i^3\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A + B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g^2} + \frac{2\,d^2\,(b\,c - a\,d)\,i^3\,(a + b\,x)\,\left(A + B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^4\,g^2} - \frac{(b\,c - a\,d)^2\,i^3\,(c + d\,x)\,\left(A + B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^3\,g^2\,(a + b\,x)} + \frac{d\,i^3\,(c + d\,x)^2\,\left(A + B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,b^2\,g^2} + \frac{B^2\,d\,(b\,c - a\,d)^2\,i^3\,\text{Log}[c + d\,x]}{b^4\,g^2} + \frac{B\,d\,(b\,c - a\,d)^2\,i^3\,\left(A + B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}\left[1 - \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^2} - \frac{3\,d\,(b\,c - a\,d)^2\,i^3\,\left(A + B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}\left[1 - \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^2} + \frac{4\,B^2\,d\,(b\,c - a\,d)^2\,i^3\,\text{PolyLog}\left[2, \frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^4\,g^2} - \frac{B^2\,d\,(b\,c - a\,d)^2\,i^3\,\text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^2} + \frac{6\,B\,d\,(b\,c - a\,d)^2\,i^3\,\left(A + B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^2} + \frac{6\,B^2\,d\,(b\,c - a\,d)^2\,i^3\,\text{PolyLog}\left[3, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^2}$$

Result (type 4, 1751 leaves, 90 steps):

$$-\frac{A\,B\,d^2\,(b\,c - a\,d)\,i^3\,x}{b^3\,g^2} - \frac{2\,B^2\,(b\,c - a\,d)^3\,i^3}{b^4\,g^2\,(a + b\,x)} - \frac{2\,B^2\,d\,(b\,c - a\,d)^2\,i^3\,\text{Log}[a + b\,x]}{b^4\,g^2} + \frac{a^2\,B^2\,d^3\,i^3\,\text{Log}[a + b\,x]^2}{2\,b^4\,g^2} - \frac{a\,B^2\,d^2\,(3\,b\,c - 2\,a\,d)\,i^3\,\text{Log}[a + b\,x]^2}{b^4\,g^2} - \frac{3\,A\,B\,d\,(b\,c - a\,d)^2\,i^3\,\text{Log}[a + b\,x]^2}{b^4\,g^2} + \frac{B^2\,d\,(b\,c - a\,d)^2\,i^3\,\text{Log}[a + b\,x]^2}{b^4\,g^2} - \frac{B^2\,d^2\,(b\,c - a\,d)\,i^3\,(a + b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{b^4\,g^2} -$$

$$\frac{3 B^2 d (b c - a d)^2 i^3 \text{Log}\left[-\frac{b c - a d}{d (a+b x)}\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{b^4 g^2} - \frac{3 B^2 d (b c - a d)^2 i^3 \text{Log}[a + b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{b^4 g^2} -$$

$$\frac{2 B (b c - a d)^3 i^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g^2 (a + b x)} - \frac{a^2 B d^3 i^3 \text{Log}[a + b x] \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g^2} +$$

$$\frac{2 a B d^2 (3 b c - 2 a d) i^3 \text{Log}[a + b x] \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g^2} -$$

$$\frac{2 B d (b c - a d)^2 i^3 \text{Log}[a + b x] \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g^2} + \frac{d^2 (3 b c - 2 a d) i^3 x \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^2} +$$

$$\frac{d^3 i^3 x^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^2 g^2} - \frac{(b c - a d)^3 i^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^4 g^2 (a + b x)} +$$

$$\frac{3 d (b c - a d)^2 i^3 \text{Log}[a + b x] \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^4 g^2} + \frac{3 B^2 d (b c - a d)^2 i^3 \text{Log}[c + d x]}{b^4 g^2} -$$

$$\frac{B^2 c^2 d i^3 \text{Log}\left[-\frac{d (a+b x)}{b c - a d}\right] \text{Log}[c + d x]}{b^2 g^2} + \frac{2 B^2 c d (3 b c - 2 a d) i^3 \text{Log}\left[-\frac{d (a+b x)}{b c - a d}\right] \text{Log}[c + d x]}{b^3 g^2} -$$

$$\frac{2 B^2 d (b c - a d)^2 i^3 \text{Log}\left[-\frac{d (a+b x)}{b c - a d}\right] \text{Log}[c + d x]}{b^4 g^2} + \frac{B c^2 d i^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c + d x]}{b^2 g^2} -$$

$$\frac{2 B c d (3 b c - 2 a d) i^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c + d x]}{b^3 g^2} +$$

$$\frac{2 B d (b c - a d)^2 i^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c + d x]}{b^4 g^2} + \frac{B^2 c^2 d i^3 \text{Log}[c + d x]^2}{2 b^2 g^2} -$$

$$\frac{B^2 c d (3 b c - 2 a d) i^3 \text{Log}[c + d x]^2}{b^3 g^2} + \frac{B^2 d (b c - a d)^2 i^3 \text{Log}[c + d x]^2}{b^4 g^2} -$$

$$\frac{a^2 B^2 d^3 i^3 \text{Log}[a + b x] \text{Log}\left[\frac{b (c+d x)}{b c - a d}\right]}{b^4 g^2} + \frac{2 a B^2 d^2 (3 b c - 2 a d) i^3 \text{Log}[a + b x] \text{Log}\left[\frac{b (c+d x)}{b c - a d}\right]}{b^4 g^2} +$$

$$\frac{6 A B d (b c - a d)^2 i^3 \text{Log}[a + b x] \text{Log}\left[\frac{b (c+d x)}{b c - a d}\right]}{b^4 g^2} -$$

$$\frac{2 B^2 d (b c - a d)^2 i^3 \text{Log}[a + b x] \text{Log}\left[\frac{b (c+d x)}{b c - a d}\right]}{b^4 g^2} - \frac{a^2 B^2 d^3 i^3 \text{PolyLog}\left[2, -\frac{d (a+b x)}{b c - a d}\right]}{b^4 g^2} +$$

$$\frac{2 a B^2 d^2 (3 b c - 2 a d) i^3 \text{PolyLog}\left[2, -\frac{d (a+b x)}{b c - a d}\right]}{b^4 g^2} + \frac{6 A B d (b c - a d)^2 i^3 \text{PolyLog}\left[2, -\frac{d (a+b x)}{b c - a d}\right]}{b^4 g^2} -$$

$$\frac{2 B^2 d (b c - a d)^2 i^3 \text{PolyLog}\left[2, -\frac{d (a+b x)}{b c - a d}\right]}{b^4 g^2} - \frac{B^2 c^2 d i^3 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c - a d}\right]}{b^2 g^2} +$$

$$\frac{2 B^2 c d (3 b c - 2 a d) i^3 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c - a d}\right]}{b^3 g^2} - \frac{2 B^2 d (b c - a d)^2 i^3 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c - a d}\right]}{b^4 g^2} +$$

$$\frac{6 B^2 d (b c-a d)^2 i^3 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{b^4 g^2}+\frac{6 B^2 d (b c-a d)^2 i^3 \operatorname{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{b^4 g^2}$$

Problem 80: Result valid but suboptimal antiderivative.

$$\int \frac{(c i+d i x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^3} \, dx$$

Optimal (type 4, 604 leaves, 13 steps):

$$-\frac{4 B^2 d (b c-a d) i^3 (c+d x)}{b^3 g^3 (a+b x)}-\frac{B^2 (b c-a d) i^3 (c+d x)^2}{4 b^2 g^3 (a+b x)^2}-\frac{4 B d (b c-a d) i^3 (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^3 (a+b x)}-\frac{B (b c-a d) i^3 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^2 g^3 (a+b x)^2}+\frac{2 B d^2 (b c-a d) i^3 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g^3}+\frac{d^3 i^3 (a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^4 g^3}-\frac{2 d (b c-a d) i^3 (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^3 (a+b x)}-\frac{(b c-a d) i^3 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^2 g^3 (a+b x)^2}-\frac{3 d^2 (b c-a d) i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^3}+\frac{2 B^2 d^2 (b c-a d) i^3 \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^4 g^3}+\frac{6 B d^2 (b c-a d) i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^3}+\frac{6 B^2 d^2 (b c-a d) i^3 \operatorname{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^3}$$

Result (type 4, 1412 leaves, 95 steps):

$$-\frac{B^2 (b c-a d)^3 i^3}{4 b^4 g^3 (a+b x)^2}-\frac{9 B^2 d (b c-a d)^2 i^3}{2 b^4 g^3 (a+b x)}-\frac{9 B^2 d^2 (b c-a d) i^3 \mathrm{Log}[a+b x]}{2 b^4 g^3}-$$

$$\frac{a B^2 d^3 i^3 \mathrm{Log}[a+b x]^2}{b^4 g^3}-\frac{3 A B d^2 (b c-a d) i^3 \mathrm{Log}[a+b x]^2}{b^4 g^3}+$$

$$\frac{5 B^2 d^2 (b c-a d) i^3 \mathrm{Log}[a+b x]^2}{2 b^4 g^3}-\frac{3 B^2 d^2 (b c-a d) i^3 \mathrm{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{b^4 g^3}-$$

$$\frac{3 B^2 d^2 (b c-a d) i^3 \mathrm{Log}[a+b x] \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{b^4 g^3}-\frac{B (b c-a d)^3 i^3 \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^4 g^3 (a+b x)^2}-$$

$$\frac{5 B d (b c-a d)^2 i^3 \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g^3 (a+b x)}+\frac{2 a B d^3 i^3 \mathrm{Log}[a+b x] \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g^3}-$$

$$\frac{5 B d^2 (b c-a d) i^3 \mathrm{Log}[a+b x] \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g^3}+\frac{d^3 i^3 x \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^3}-$$

$$\frac{(b c-a d)^3 i^3 \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^4 g^3 (a+b x)^2}-\frac{3 d (b c-a d)^2 i^3 \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^4 g^3 (a+b x)}+$$

$$\frac{3 d^2 (b c-a d) i^3 \mathrm{Log}[a+b x] \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^4 g^3}+\frac{9 B^2 d^2 (b c-a d) i^3 \mathrm{Log}[c+d x]}{2 b^4 g^3}+$$

$$\frac{2 B^2 c d^2 i^3 \mathrm{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \mathrm{Log}[c+d x]}{b^3 g^3}-\frac{5 B^2 d^2 (b c-a d) i^3 \mathrm{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \mathrm{Log}[c+d x]}{b^4 g^3}-$$

$$\frac{2 B c d^2 i^3 \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \mathrm{Log}[c+d x]}{b^3 g^3}+\frac{5 B d^2 (b c-a d) i^3 \left(A+B \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \mathrm{Log}[c+d x]}{b^4 g^3}-$$

$$\frac{B^2 c d^2 i^3 \mathrm{Log}[c+d x]^2}{b^3 g^3}+\frac{5 B^2 d^2 (b c-a d) i^3 \mathrm{Log}[c+d x]^2}{2 b^4 g^3}+$$

$$\frac{2 a B^2 d^3 i^3 \mathrm{Log}[a+b x] \mathrm{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^4 g^3}+\frac{6 A B d^2 (b c-a d) i^3 \mathrm{Log}[a+b x] \mathrm{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^4 g^3}-$$

$$\frac{5 B^2 d^2 (b c-a d) i^3 \mathrm{Log}[a+b x] \mathrm{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^4 g^3}+\frac{2 a B^2 d^3 i^3 \mathrm{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^4 g^3}+$$

$$\frac{6 A B d^2 (b c-a d) i^3 \mathrm{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^4 g^3}-\frac{5 B^2 d^2 (b c-a d) i^3 \mathrm{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^4 g^3}+$$

$$\frac{2 B^2 c d^2 i^3 \mathrm{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^3}-\frac{5 B^2 d^2 (b c-a d) i^3 \mathrm{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^4 g^3}+$$

$$\frac{6 B^2 d^2 (b c-a d) i^3 \mathrm{Log}\left[\frac{e (a+b x)}{c+d x}\right] \mathrm{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{b^4 g^3}+$$

$$\frac{6 B^2 d^2 (b c-a d) i^3 \mathrm{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{b^4 g^3}$$

Problem 81: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c\,i + d\,i\,x)^3 \left(A + B \,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g + b\,g\,x)^5}\,dx$$

Optimal (type 3, 147 leaves, 3 steps):

$$-\frac{B^2\,i^3\,(c+d\,x)^4}{32\,(b\,c-a\,d)\,g^5\,(a+b\,x)^4} - \frac{B\,i^3\,(c+d\,x)^4 \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{8\,(b\,c-a\,d)\,g^5\,(a+b\,x)^4} - \frac{i^3\,(c+d\,x)^4 \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,(b\,c-a\,d)\,g^5\,(a+b\,x)^4}$$

Result (type 4, 970 leaves, 130 steps):

$$-\frac{B^2\,(b\,c-a\,d)^3\,i^3}{32\,b^4\,g^5\,(a+b\,x)^4} - \frac{B^2\,d\,(b\,c-a\,d)^2\,i^3}{8\,b^4\,g^5\,(a+b\,x)^3} - \frac{3\,B^2\,d^2\,(b\,c-a\,d)\,i^3}{16\,b^4\,g^5\,(a+b\,x)^2} - \frac{B^2\,d^3\,i^3}{8\,b^4\,g^5\,(a+b\,x)} - \frac{B^2\,d^4\,i^3\,\mathrm{Log}[a+b\,x]}{8\,b^4\,(b\,c-a\,d)\,g^5} + \frac{B^2\,d^4\,i^3\,\mathrm{Log}[a+b\,x]^2}{4\,b^4\,(b\,c-a\,d)\,g^5} -$$
$$\frac{B\,(b\,c-a\,d)^3\,i^3 \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{8\,b^4\,g^5\,(a+b\,x)^4} - \frac{B\,d\,(b\,c-a\,d)^2\,i^3 \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^4\,g^5\,(a+b\,x)^3} -$$
$$\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3 \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{4\,b^4\,g^5\,(a+b\,x)^2} - \frac{B\,d^3\,i^3 \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^4\,g^5\,(a+b\,x)} -$$
$$\frac{B\,d^4\,i^3\,\mathrm{Log}[a+b\,x] \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^4\,(b\,c-a\,d)\,g^5} - \frac{(b\,c-a\,d)^3\,i^3 \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,b^4\,g^5\,(a+b\,x)^4} -$$
$$\frac{d\,(b\,c-a\,d)^2\,i^3 \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^4\,g^5\,(a+b\,x)^3} - \frac{3\,d^2\,(b\,c-a\,d)\,i^3 \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,b^4\,g^5\,(a+b\,x)^2} -$$
$$\frac{d^3\,i^3 \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^4\,g^5\,(a+b\,x)} + \frac{B^2\,d^4\,i^3\,\mathrm{Log}[c+d\,x]}{8\,b^4\,(b\,c-a\,d)\,g^5} - \frac{B^2\,d^4\,i^3\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{2\,b^4\,(b\,c-a\,d)\,g^5} +$$
$$\frac{B\,d^4\,i^3 \left(A + B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]}{2\,b^4\,(b\,c-a\,d)\,g^5} + \frac{B^2\,d^4\,i^3\,\mathrm{Log}[c+d\,x]^2}{4\,b^4\,(b\,c-a\,d)\,g^5} -$$
$$\frac{B^2\,d^4\,i^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{2\,b^4\,(b\,c-a\,d)\,g^5} - \frac{B^2\,d^4\,i^3\,\mathrm{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{2\,b^4\,(b\,c-a\,d)\,g^5} - \frac{B^2\,d^4\,i^3\,\mathrm{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{2\,b^4\,(b\,c-a\,d)\,g^5}$$

Problem 82: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c\,i + d\,i\,x)^3 \left(A + B \,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g + b\,g\,x)^6}\,dx$$

Optimal (type 3, 299 leaves, 7 steps):

$$\frac{B^2 d i^3 (c+d x)^4}{32 (b c-a d)^2 g^6 (a+b x)^4}-\frac{2 b B^2 i^3 (c+d x)^5}{125 (b c-a d)^2 g^6 (a+b x)^5}+\frac{B d i^3 (c+d x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{8 (b c-a d)^2 g^6 (a+b x)^4}-\frac{2 b B i^3 (c+d x)^5 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{25 (b c-a d)^2 g^6 (a+b x)^5}+\frac{d i^3 (c+d x)^4 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 (b c-a d)^2 g^6 (a+b x)^4}-\frac{b i^3 (c+d x)^5 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 (b c-a d)^2 g^6 (a+b x)^5}$$

Result (type 4, 1061 leaves, 146 steps):

$$-\frac{2 B^2 (b c-a d)^3 i^3}{125 b^4 g^6 (a+b x)^5}-\frac{39 B^2 d (b c-a d)^2 i^3}{800 b^4 g^6 (a+b x)^4}-\frac{7 B^2 d^2 (b c-a d) i^3}{200 b^4 g^6 (a+b x)^3}+\frac{11 B^2 d^3 i^3}{400 b^4 g^6 (a+b x)^2}+\frac{9 B^2 d^4 i^3}{200 b^4 (b c-a d) g^6 (a+b x)}+\frac{9 B^2 d^5 i^3 \operatorname{Log}[a+b x]}{200 b^4 (b c-a d)^2 g^6}-\frac{B^2 d^5 i^3 \operatorname{Log}[a+b x]^2}{20 b^4 (b c-a d)^2 g^6}-\frac{2 B (b c-a d)^3 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{25 b^4 g^6 (a+b x)^5}-\frac{11 B d (b c-a d)^2 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{40 b^4 g^6 (a+b x)^4}-\frac{3 B d^2 (b c-a d) i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^4 g^6 (a+b x)^3}-\frac{B d^3 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{20 b^4 g^6 (a+b x)^2}+\frac{B d^4 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^4 (b c-a d) g^6 (a+b x)}+\frac{B d^5 i^3 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^4 (b c-a d)^2 g^6}-\frac{(b c-a d)^3 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b^4 g^6 (a+b x)^5}-\frac{3 d (b c-a d)^2 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b^4 g^6 (a+b x)^4}-\frac{d^2 (b c-a d) i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^4 g^6 (a+b x)^3}-\frac{d^3 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^4 g^6 (a+b x)^2}-\frac{9 B^2 d^5 i^3 \operatorname{Log}[c+d x]}{200 b^4 (b c-a d)^2 g^6}+\frac{B^2 d^5 i^3 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{10 b^4 (b c-a d)^2 g^6}-\frac{B d^5 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{10 b^4 (b c-a d)^2 g^6}-\frac{B^2 d^5 i^3 \operatorname{Log}[c+d x]^2}{20 b^4 (b c-a d)^2 g^6}+\frac{B^2 d^5 i^3 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{10 b^4 (b c-a d)^2 g^6}+\frac{B^2 d^5 i^3 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{10 b^4 (b c-a d)^2 g^6}+\frac{B^2 d^5 i^3 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{10 b^4 (b c-a d)^2 g^6}$$

Problem 83: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3 \left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^7}\,dx$$

Optimal (type 3, 463 leaves, 9 steps):

$$-\frac{B^2 d^2 i^3 (c+d\,x)^4}{32\,(b\,c-a\,d)^3 g^7 (a+b\,x)^4}+\frac{4\,b\,B^2 d\,i^3 (c+d\,x)^5}{125\,(b\,c-a\,d)^3 g^7 (a+b\,x)^5}-\frac{b^2 B^2 i^3 (c+d\,x)^6}{108\,(b\,c-a\,d)^3 g^7 (a+b\,x)^6}-\frac{B\,d^2 i^3 (c+d\,x)^4 \left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{8\,(b\,c-a\,d)^3 g^7 (a+b\,x)^4}+\frac{4\,b\,B\,d\,i^3 (c+d\,x)^5 \left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{25\,(b\,c-a\,d)^3 g^7 (a+b\,x)^5}-\frac{b^2 B\,i^3 (c+d\,x)^6 \left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{18\,(b\,c-a\,d)^3 g^7 (a+b\,x)^6}-\frac{d^2 i^3 (c+d\,x)^4 \left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,(b\,c-a\,d)^3 g^7 (a+b\,x)^4}+\frac{2\,b\,d\,i^3 (c+d\,x)^5 \left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{5\,(b\,c-a\,d)^3 g^7 (a+b\,x)^5}-\frac{b^2 i^3 (c+d\,x)^6 \left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{6\,(b\,c-a\,d)^3 g^7 (a+b\,x)^6}$$

Result (type 4, 1152 leaves, 162 steps):

$$-\frac{B^2 (b c-a d)^3 i^3}{108 b^4 g^7 (a+b x)^6}-\frac{53 B^2 d (b c-a d)^2 i^3}{2250 b^4 g^7 (a+b x)^5}-\frac{73 B^2 d^2 (b c-a d) i^3}{7200 b^4 g^7 (a+b x)^4}+$$
$$\frac{53 B^2 d^3 i^3}{5400 b^4 g^7 (a+b x)^3}-\frac{23 B^2 d^4 i^3}{3600 b^4 (b c-a d) g^7 (a+b x)^2}-\frac{37 B^2 d^5 i^3}{1800 b^4 (b c-a d)^2 g^7 (a+b x)}-$$
$$\frac{37 B^2 d^6 i^3 \text{Log}[a+b x]}{1800 b^4 (b c-a d)^3 g^7}+\frac{B^2 d^6 i^3 \text{Log}[a+b x]^2}{60 b^4 (b c-a d)^3 g^7}-\frac{B (b c-a d)^3 i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{18 b^4 g^7 (a+b x)^6}-$$
$$\frac{13 B d (b c-a d)^2 i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{75 b^4 g^7 (a+b x)^5}-\frac{19 B d^2 (b c-a d) i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{120 b^4 g^7 (a+b x)^4}-$$
$$\frac{B d^3 i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{90 b^4 g^7 (a+b x)^3}+\frac{B d^4 i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 b^4 (b c-a d) g^7 (a+b x)^2}-\frac{B d^5 i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^4 (b c-a d)^2 g^7 (a+b x)}-$$
$$\frac{B d^6 i^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^4 (b c-a d)^3 g^7}-\frac{(b c-a d)^3 i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{6 b^4 g^7 (a+b x)^6}-$$
$$\frac{3 d (b c-a d)^2 i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b^4 g^7 (a+b x)^5}-\frac{3 d^2 (b c-a d) i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b^4 g^7 (a+b x)^4}-$$
$$\frac{d^3 i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b^4 g^7 (a+b x)^3}+\frac{37 B^2 d^6 i^3 \text{Log}[c+d x]}{1800 b^4 (b c-a d)^3 g^7}-\frac{B^2 d^6 i^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{30 b^4 (b c-a d)^3 g^7}+$$
$$\frac{B d^6 i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{30 b^4 (b c-a d)^3 g^7}+\frac{B^2 d^6 i^3 \text{Log}[c+d x]^2}{60 b^4 (b c-a d)^3 g^7}-$$
$$\frac{B^2 d^6 i^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{30 b^4 (b c-a d)^3 g^7}-\frac{B^2 d^6 i^3 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{30 b^4 (b c-a d)^3 g^7}-\frac{B^2 d^6 i^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{30 b^4 (b c-a d)^3 g^7}$$

Problem 84: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{c i+d i x} \, dx$$

Optimal (type 4, 718 leaves, 25 steps):

$$\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,x}{3\,d^3\,i}+\frac{B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{3\,d^4\,i}+$$

$$\frac{7\,B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,d^3\,i}-\frac{b^2\,B\,(b\,c-a\,d)\,g^3\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,d^4\,i}+$$

$$\frac{6\,B\,(b\,c-a\,d)^3\,g^3\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^4\,i}+$$

$$\frac{3\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^3\,i}-$$

$$\frac{3\,b^2\,(b\,c-a\,d)\,g^3\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,d^4\,i}+\frac{b^3\,g^3\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,d^4\,i}+$$

$$\frac{(b\,c-a\,d)^3\,g^3\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^4\,i}-\frac{2\,B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{Log}[c+d\,x]}{d^4\,i}-$$

$$\frac{7\,B\,(b\,c-a\,d)^3\,g^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{3\,d^4\,i}+\frac{6\,B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i}+$$

$$\frac{2\,B\,(b\,c-a\,d)^3\,g^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i}+$$

$$\frac{7\,B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{3\,d^4\,i}-\frac{2\,B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i}$$

Result (type 4, 1828 leaves, 106 steps):

$$\frac{5\,A\,b\,B\,(b\,c-a\,d)^2\,g^3\,x}{3\,d^3\,i}+\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,x}{3\,d^3\,i}-\frac{a\,B^2\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}[a+b\,x]^2}{d^3\,i}+$$

$$\frac{B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]^2}{d^4\,i}-\frac{B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]^2}{d^4\,i}+$$

$$\frac{5\,B^2\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{3\,d^3\,i}-\frac{B\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,d^2\,i}+$$

$$\frac{2\,a\,B\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^3\,i}+$$

$$\frac{b\,(b\,c-a\,d)^2\,g^3\,x\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^3\,i}-\frac{(b\,c-a\,d)\,g^3\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,d^2\,i}+$$

$$\frac{g^3\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,d\,i}-\frac{2\,B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{Log}[c+d\,x]}{d^4\,i}+$$

$$\frac{2\,b\,B^2\,c\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{d^4\,i}+\frac{5\,B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{3\,d^4\,i}-$$

$$\frac{2\,b\,B\,c\,(b\,c-a\,d)^2\,g^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]}{d^4\,i}-$$

$$\frac{5 B (b c-a d)^3 g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{3 d^4 i}-\frac{b B^2 c (b c-a d)^2 g^3 \text{Log}[c+d x]^2}{d^4 i}-$$
$$\frac{5 B^2 (b c-a d)^3 g^3 \text{Log}[c+d x]^2}{6 d^4 i}+\frac{2 a B^2 (b c-a d)^2 g^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3 i}-$$
$$\frac{B^2 (b c-a d)^3 g^3 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^4 i}+\frac{B^2 (b c-a d)^3 g^3 \text{Log}[a+b x]^2 \text{Log}[i (c+d x)]}{d^4 i}+$$
$$\frac{2 B^2 (b c-a d)^3 g^3 \text{Log}[a+b x] \text{Log}\left[\frac{1}{c+d x}\right] \text{Log}[i (c+d x)]}{d^4 i}-\frac{A B (b c-a d)^3 g^3 \text{Log}[i (c+d x)]^2}{d^4 i}+$$
$$\frac{B^2 (b c-a d)^3 g^3 \text{Log}[a+b x] \text{Log}[i (c+d x)]^2}{d^4 i}-\frac{B^2 (b c-a d)^3 g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[i (c+d x)]^2}{d^4 i}-$$
$$\frac{B^2 (b c-a d)^3 g^3 \text{Log}[i (c+d x)]^3}{3 d^4 i}+\frac{2 A B (b c-a d)^3 g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c i+d i x]}{d^4 i}-$$
$$\frac{1}{d^4 i}2 B^2 (b c-a d)^3 g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)$$
$$\text{Log}[c i+d i x]-\frac{(b c-a d)^3 g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \text{Log}[c i+d i x]}{d^4 i}+$$
$$\frac{B^2 (b c-a d)^3 g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c i+d i x]^2}{d^4 i}-\frac{B^2 (b c-a d)^3 g^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c i+d i x]^2}{d^4 i}+$$
$$\frac{2 a B^2 (b c-a d)^2 g^3 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^3 i}-\frac{2 B^2 (b c-a d)^3 g^3 \text{Log}[a+b x] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^4 i}+$$
$$\frac{2 b B^2 c (b c-a d)^2 g^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^4 i}+\frac{2 A B (b c-a d)^3 g^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^4 i}+$$
$$\frac{5 B^2 (b c-a d)^3 g^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 d^4 i}+\frac{2 B^2 (b c-a d)^3 g^3 \text{Log}\left[\frac{1}{c+d x}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^4 i}-$$
$$\frac{1}{d^4 i}2 B^2 (b c-a d)^3 g^3 \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+$$
$$\frac{2 B^2 (b c-a d)^3 g^3 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{d^4 i}+\frac{2 B^2 (b c-a d)^3 g^3 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{d^4 i}$$

Problem 85: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{c i+d i x} \, dx$$

Optimal (type 4, 536 leaves, 15 steps) :

$$-\frac{B\,(b\,c-a\,d)\,g^2\,(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^2\,i}-\frac{4\,B\,(b\,c-a\,d)^2\,g^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^3\,i}-$$

$$\frac{2\,(b\,c-a\,d)\,g^2\,(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^2\,i}+\frac{b^2\,g^2\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,d^3\,i}-$$

$$\frac{(b\,c-a\,d)^2\,g^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^3\,i}+\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}[c+d\,x]}{d^3\,i}+$$

$$\frac{B\,(b\,c-a\,d)^2\,g^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{d^3\,i}-\frac{4\,B^2\,(b\,c-a\,d)^2\,g^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^3\,i}-$$

$$\frac{2\,B\,(b\,c-a\,d)^2\,g^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^3\,i}-$$

$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{d^3\,i}+\frac{2\,B^2\,(b\,c-a\,d)^2\,g^2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^3\,i}$$

Result (type 4, 1666 leaves, 86 steps):

$$-\frac{A\,b\,B\,(b\,c-a\,d)\,g^2\,x}{d^2\,i}+\frac{a\,B^2\,(b\,c-a\,d)\,g^2\,\text{Log}[a+b\,x]^2}{d^2\,i}-\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{1}{c+d\,x}\right]^2}{d^3\,i}+$$

$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[\frac{1}{c+d\,x}\right]^2}{d^3\,i}-\frac{B^2\,(b\,c-a\,d)\,g^2\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{d^2\,i}-$$

$$\frac{2\,a\,B\,(b\,c-a\,d)\,g^2\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^2\,i}-\frac{b\,(b\,c-a\,d)\,g^2\,x\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^2\,i}+$$

$$\frac{g^2\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,d\,i}+\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}[c+d\,x]}{d^3\,i}-$$

$$\frac{2\,b\,B^2\,c\,(b\,c-a\,d)\,g^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{d^3\,i}-\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{d^3\,i}+$$

$$\frac{2\,b\,B\,c\,(b\,c-a\,d)\,g^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{d^3\,i}+$$

$$\frac{B\,(b\,c-a\,d)^2\,g^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{d^3\,i}+\frac{b\,B^2\,c\,(b\,c-a\,d)\,g^2\,\text{Log}[c+d\,x]^2}{d^3\,i}+$$

$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}[c+d\,x]^2}{2\,d^3\,i}-\frac{2\,a\,B^2\,(b\,c-a\,d)\,g^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2\,i}+$$

$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i}-\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}[a+b\,x]^2\,\text{Log}[i\,(c+d\,x)]}{d^3\,i}-$$

$$\frac{2\,B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{Log}[i\,(c+d\,x)]}{d^3\,i}+\frac{A\,B\,(b\,c-a\,d)^2\,g^2\,\text{Log}[i\,(c+d\,x)]^2}{d^3\,i}-$$

$$\frac{B^2 (b c-a d)^2 g^2 \text{Log}[a+b x] \text{Log}[i (c+d x)]^2}{d^3 i}+\frac{B^2 (b c-a d)^2 g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[i (c+d x)]^2}{d^3 i}+$$
$$\frac{B^2 (b c-a d)^2 g^2 \text{Log}[i (c+d x)]^3}{3 d^3 i}-\frac{2 A B (b c-a d)^2 g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c i+d i x]}{d^3 i}+$$
$$\frac{1}{d^3 i}2 B^2 (b c-a d)^2 g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)$$
$$\text{Log}[c i+d i x]+\frac{(b c-a d)^2 g^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \text{Log}[c i+d i x]}{d^3 i}-$$
$$\frac{B^2 (b c-a d)^2 g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c i+d i x]^2}{d^3 i}+\frac{B^2 (b c-a d)^2 g^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c i+d i x]^2}{d^3 i}-$$
$$\frac{2 a B^2 (b c-a d) g^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^2 i}+\frac{2 B^2 (b c-a d)^2 g^2 \text{Log}[a+b x] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^3 i}-$$
$$\frac{2 b B^2 c (b c-a d) g^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i}-\frac{2 A B (b c-a d)^2 g^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i}-$$
$$\frac{B^2 (b c-a d)^2 g^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i}-\frac{2 B^2 (b c-a d)^2 g^2 \text{Log}\left[\frac{1}{c+d x}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i}+$$
$$\frac{1}{d^3 i}2 B^2 (b c-a d)^2 g^2 \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-$$
$$\frac{2 B^2 (b c-a d)^2 g^2 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{d^3 i}-\frac{2 B^2 (b c-a d)^2 g^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i}$$

Problem 86: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{c i+d i x} \, dx$$

Optimal (type 4, 283 leaves, 9 steps):

$$\frac{2 B (b c-a d) g \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^2 i}+\frac{g (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d i}+$$
$$\frac{(b c-a d) g \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^2 i}+\frac{2 B^2 (b c-a d) g \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i}+$$
$$\frac{2 B (b c-a d) g \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i}-\frac{2 B^2 (b c-a d) g \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i}$$

Result (type 4, 1072 leaves, 68 steps):

$$-\frac{a B^2 g \operatorname{Log}[a+b x]^2}{d i}+\frac{B^2 (b c-a d) g \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{d^2 i}-$$
$$\frac{B^2 (b c-a d) g \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{d^2 i}+\frac{2 a B g \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d i}+$$
$$\frac{b g x \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d i}+\frac{B^2 (b c-a d) g \operatorname{Log}[a+b x]^2 \operatorname{Log}[c+d x]}{d^2 i}+$$
$$\frac{2 b B^2 c g \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d^2 i}+\frac{2 A B (b c-a d) g \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d^2 i}+$$
$$\frac{2 B^2 (b c-a d) g \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{1}{c+d x}\right] \operatorname{Log}[c+d x]}{d^2 i}-\frac{1}{d^2 i}$$
$$2 B^2 (b c-a d) g \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \left(\operatorname{Log}[a+b x]+\operatorname{Log}\left[\frac{1}{c+d x}\right]-\operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]-$$
$$\frac{2 b B c g \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{d^2 i}-\frac{(b c-a d) g \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \operatorname{Log}[c+d x]}{d^2 i}-$$
$$\frac{b B^2 c g \operatorname{Log}[c+d x]^2}{d^2 i}-\frac{A B (b c-a d) g \operatorname{Log}[c+d x]^2}{d^2 i}+\frac{B^2 (b c-a d) g \operatorname{Log}[a+b x] \operatorname{Log}[c+d x]^2}{d^2 i}-$$
$$\frac{B^2 (b c-a d) g \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{Log}[c+d x]^2}{d^2 i}-\frac{B^2 (b c-a d) g \operatorname{Log}[c+d x]^3}{3 d^2 i}+$$
$$\frac{2 a B^2 g \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d i}-\frac{B^2 (b c-a d) g \operatorname{Log}[a+b x]^2 \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2 i}+$$
$$\frac{2 a B^2 g \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d i}-\frac{2 B^2 (b c-a d) g \operatorname{Log}[a+b x] \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^2 i}+$$
$$\frac{2 b B^2 c g \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i}+\frac{2 A B (b c-a d) g \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i}+$$
$$\frac{2 B^2 (b c-a d) g \operatorname{Log}\left[\frac{1}{c+d x}\right] \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i}-\frac{1}{d^2 i}$$
$$2 B^2 (b c-a d) g \left(\operatorname{Log}[a+b x]+\operatorname{Log}\left[\frac{1}{c+d x}\right]-\operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+$$
$$\frac{2 B^2 (b c-a d) g \operatorname{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{d^2 i}+\frac{2 B^2 (b c-a d) g \operatorname{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i}$$

Problem 87: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{c i+d i x} \, dx$$

Optimal (type 4, 127 leaves, 4 steps):

$$-\frac{\text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d i}-\frac{2 B \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d i}+\frac{2 B^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d i}$$

Result (type 4, 721 leaves, 46 steps):

$$-\frac{B^2 \text{Log}[a+b x] \text{Log}\left[\frac{1}{c+d x}\right]^2}{d i}+\frac{B^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[\frac{1}{c+d x}\right]^2}{d i}+\frac{B^2 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d i}-$$
$$\frac{B^2 \text{Log}[a+b x]^2 \text{Log}[i (c+d x)]}{d i}-\frac{2 B^2 \text{Log}[a+b x] \text{Log}\left[\frac{1}{c+d x}\right] \text{Log}[i (c+d x)]}{d i}+$$
$$\frac{A B \text{Log}[i (c+d x)]^2}{d i}-\frac{B^2 \text{Log}[a+b x] \text{Log}[i (c+d x)]^2}{d i}+\frac{B^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[i (c+d x)]^2}{d i}+$$
$$\frac{B^2 \text{Log}[i (c+d x)]^3}{3 d i}-\frac{2 A B \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c i+d i x]}{d i}+\frac{1}{d i}$$
$$2 B^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c i+d i x]+$$
$$\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \text{Log}[c i+d i x]}{d i}-\frac{B^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c i+d i x]^2}{d i}+$$
$$\frac{B^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c i+d i x]^2}{d i}+\frac{2 B^2 \text{Log}[a+b x] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d i}-$$
$$\frac{2 A B \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d i}-\frac{2 B^2 \text{Log}\left[\frac{1}{c+d x}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d i}+$$
$$\frac{2 B^2 \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d i}-$$
$$\frac{2 B^2 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{d i}-\frac{2 B^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{d i}$$

Problem 88: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x) (c i+d i x)} \, dx$$

Optimal (type 3, 44 leaves, 3 steps):

$$\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^3}{3 B (b c-a d) g i}$$

Result (type 4, 1163 leaves, 61 steps):

$$-\frac{A B \operatorname{Log}[a+b x]^2}{(b c-a d) g i}+\frac{B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d) g i}-\frac{B^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d) g i}-$$

$$\frac{B^2 \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d) g i}-\frac{B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d) g i}+$$

$$\frac{\operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d) g i}+\frac{B^2 \operatorname{Log}[a+b x]^2 \operatorname{Log}[c+d x]}{(b c-a d) g i}+$$

$$\frac{2 A B \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d) g i}+\frac{2 B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{1}{c+d x}\right] \operatorname{Log}[c+d x]}{(b c-a d) g i}-\frac{1}{(b c-a d) g i}$$

$$2 B^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \left(\operatorname{Log}[a+b x]+\operatorname{Log}\left[\frac{1}{c+d x}\right]-\operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]-$$

$$\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \operatorname{Log}[c+d x]}{(b c-a d) g i}-\frac{A B \operatorname{Log}[c+d x]^2}{(b c-a d) g i}+$$

$$\frac{B^2 \operatorname{Log}[a+b x] \operatorname{Log}[c+d x]^2}{(b c-a d) g i}-\frac{B^2 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{Log}[c+d x]^2}{(b c-a d) g i}-\frac{B^2 \operatorname{Log}[c+d x]^3}{3 (b c-a d) g i}+$$

$$\frac{2 A B \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d) g i}-\frac{B^2 \operatorname{Log}[a+b x]^2 \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d) g i}+$$

$$\frac{2 A B \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d) g i}-\frac{2 B^2 \operatorname{Log}[a+b x] \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d) g i}+$$

$$\frac{2 A B \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d) g i}+\frac{2 B^2 \operatorname{Log}\left[\frac{1}{c+d x}\right] \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d) g i}-$$

$$\frac{2 B^2 \left(\operatorname{Log}[a+b x]+\operatorname{Log}\left[\frac{1}{c+d x}\right]-\operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d) g i}+$$

$$\frac{2 B^2 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d) g i}+\frac{2 B^2 \operatorname{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d) g i}+$$

$$\frac{2 B^2 \operatorname{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d) g i}+\frac{2 B^2 \operatorname{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d) g i}$$

Problem 89: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^2 (c i+d i x)} \, dx$$

Optimal (type 3, 183 leaves, 7 steps):

$$-\frac{2\,b\,B^2\,(c+d\,x)}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{2\,b\,B\,(c+d\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{b\,(c+d\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{d\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^3}{3\,B\,(b\,c-a\,d)^2\,g^2\,i}$$

Result (type 4, 1684 leaves, 87 steps) :

$$-\frac{2 B^2}{(b c-a d) g^2 i (a+b x)}-\frac{2 B^2 d \text{Log}[a+b x]}{(b c-a d)^2 g^2 i}+\frac{A B d \text{Log}[a+b x]^2}{(b c-a d)^2 g^2 i}+\frac{B^2 d \text{Log}[a+b x]^2}{(b c-a d)^2 g^2 i}-$$

$$\frac{B^2 d \text{Log}[a+b x] \text{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^2 g^2 i}+\frac{B^2 d \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^2 g^2 i}+\frac{B^2 d \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^2 g^2 i}+$$

$$\frac{B^2 d \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^2 g^2 i}-\frac{2 B \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d) g^2 i (a+b x)}-\frac{2 B d \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^2 g^2 i}-$$

$$\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d) g^2 i (a+b x)}-\frac{d \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^2 g^2 i}+\frac{2 B^2 d \text{Log}[c+d x]}{(b c-a d)^2 g^2 i}-$$

$$\frac{B^2 d \text{Log}[a+b x]^2 \text{Log}[c+d x]}{(b c-a d)^2 g^2 i}-\frac{2 A B d \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^2 g^2 i}-$$

$$\frac{2 B^2 d \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^2 g^2 i}-\frac{2 B^2 d \text{Log}[a+b x] \text{Log}\left[\frac{1}{c+d x}\right] \text{Log}[c+d x]}{(b c-a d)^2 g^2 i}+\frac{1}{(b c-a d)^2 g^2 i}$$

$$2 B^2 d \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]+$$

$$\frac{2 B d \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{(b c-a d)^2 g^2 i}+\frac{d \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \text{Log}[c+d x]}{(b c-a d)^2 g^2 i}+$$

$$\frac{A B d \text{Log}[c+d x]^2}{(b c-a d)^2 g^2 i}+\frac{B^2 d \text{Log}[c+d x]^2}{(b c-a d)^2 g^2 i}-\frac{B^2 d \text{Log}[a+b x] \text{Log}[c+d x]^2}{(b c-a d)^2 g^2 i}+$$

$$\frac{B^2 d \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x]^2}{(b c-a d)^2 g^2 i}+\frac{B^2 d \text{Log}[c+d x]^3}{3 (b c-a d)^2 g^2 i}-\frac{2 A B d \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-$$

$$\frac{2 B^2 d \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}+\frac{B^2 d \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-\frac{2 A B d \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-$$

$$\frac{2 B^2 d \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}+\frac{2 B^2 d \text{Log}[a+b x] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-$$

$$\frac{2 A B d \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-\frac{2 B^2 d \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-\frac{2 B^2 d \text{Log}\left[\frac{1}{c+d x}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}+$$

$$\frac{2 B^2 d \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-$$

$$\frac{2 B^2 d \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^2 g^2 i}-\frac{2 B^2 d \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-$$

$$\frac{2 B^2 d \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-\frac{2 B^2 d \text{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^2 g^2 i}$$

Problem 90: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^3 (c i+d i x)} \, dx$$

Optimal (type 3, 343 leaves, 9 steps):

$$\frac{4 b B^2 d (c+d x)}{(b c-a d)^3 g^3 i (a+b x)}-\frac{b^2 B^2 (c+d x)^2}{4 (b c-a d)^3 g^3 i (a+b x)^2}+\frac{4 b B d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^3 i (a+b x)}-\frac{b^2 B (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^3 g^3 i (a+b x)^2}+\frac{2 b d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^3 g^3 i (a+b x)}-\frac{b^2 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^3 g^3 i (a+b x)^2}+\frac{d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^3}{3 B (b c-a d)^3 g^3 i}$$

Result (type 4, 1899 leaves, 117 steps):

$$-\frac{B^2}{4 (b c-a d) g^3 i (a+b x)^2}+\frac{7 B^2 d}{2 (b c-a d)^2 g^3 i (a+b x)}+\frac{7 B^2 d^2 \operatorname{Log}[a+b x]}{2 (b c-a d)^3 g^3 i}-\frac{A B d^2 \operatorname{Log}[a+b x]^2}{(b c-a d)^3 g^3 i}-\frac{3 B^2 d^2 \operatorname{Log}[a+b x]^2}{2 (b c-a d)^3 g^3 i}+\frac{B^2 d^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^3 g^3 i}-\frac{B^2 d^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^3 g^3 i}-\frac{B^2 d^2 \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^3 g^3 i}-\frac{B^2 d^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^3 g^3 i}-\frac{B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d) g^3 i (a+b x)^2}+\frac{3 B d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^2 g^3 i (a+b x)}+\frac{3 B d^2 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^3 i}-\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d) g^3 i (a+b x)^2}+\frac{d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^2 g^3 i (a+b x)}+\frac{d^2 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^3 g^3 i}-\frac{7 B^2 d^2 \operatorname{Log}[c+d x]}{2 (b c-a d)^3 g^3 i}+\frac{B^2 d^2 \operatorname{Log}[a+b x]^2 \operatorname{Log}[c+d x]}{(b c-a d)^3 g^3 i}+\frac{2 A B d^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d)^3 g^3 i}+\frac{3 B^2 d^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d)^3 g^3 i}+\frac{2 B^2 d^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{1}{c+d x}\right] \operatorname{Log}[c+d x]}{(b c-a d)^3 g^3 i}-\frac{1}{(b c-a d)^3 g^3 i} 2 B^2 d^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \left(\operatorname{Log}[a+b x]+\operatorname{Log}\left[\frac{1}{c+d x}\right]-\operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]-\frac{3 B d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{(b c-a d)^3 g^3 i}-\frac{d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \operatorname{Log}[c+d x]}{(b c-a d)^3 g^3 i}-$$

$$\frac{A\,B\,d^2\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g^3\,i}-\frac{3\,B^2\,d^2\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^3\,g^3\,i}+\frac{B^2\,d^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g^3\,i}-$$

$$\frac{B^2\,d^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g^3\,i}-\frac{B^2\,d^2\,\text{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)^3\,g^3\,i}+\frac{2\,A\,B\,d^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+$$

$$\frac{3\,B^2\,d^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}-\frac{B^2\,d^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+$$

$$\frac{2\,A\,B\,d^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+\frac{3\,B^2\,d^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}-$$

$$\frac{2\,B^2\,d^2\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+\frac{2\,A\,B\,d^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+$$

$$\frac{3\,B^2\,d^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+\frac{2\,B^2\,d^2\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}-$$

$$\frac{2\,B^2\,d^2\,\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+$$

$$\frac{2\,B^2\,d^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^3\,g^3\,i}+\frac{2\,B^2\,d^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+$$

$$\frac{2\,B^2\,d^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+\frac{2\,B^2\,d^2\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^3\,g^3\,i}$$

Problem 91: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^4\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 507 leaves, 11 steps):

$$-\frac{6\,b\,B^2\,d^2\,(c+d\,x)}{(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)}+\frac{3\,b^2\,B^2\,d\,(c+d\,x)^2}{4\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^2}-\frac{2\,b^3\,B^2\,(c+d\,x)^3}{27\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^3}-\frac{6\,b\,B\,d^2\,(c+d\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)}+\frac{3\,b^2\,B\,d\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^2}-\frac{2\,b^3\,B\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{9\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^3}-\frac{3\,b\,d^2\,(c+d\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)}+\frac{3\,b^2\,d\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^2}-\frac{b^3\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^3}-\frac{d^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^3}{3\,B\,(b\,c-a\,d)^4\,g^4\,i}$$

Result (type 4, 2044 leaves, 151 steps):

$$-\frac{2\,B^2}{27\,(b\,c-a\,d)\,g^4\,i\,(a+b\,x)^3}+\frac{19\,B^2\,d}{36\,(b\,c-a\,d)^2\,g^4\,i\,(a+b\,x)^2}-\frac{85\,B^2\,d^2}{18\,(b\,c-a\,d)^3\,g^4\,i\,(a+b\,x)}-\frac{85\,B^2\,d^3\,\mathrm{Log}[a+b\,x]}{18\,(b\,c-a\,d)^4\,g^4\,i}+\frac{A\,B\,d^3\,\mathrm{Log}[a+b\,x]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{11\,B^2\,d^3\,\mathrm{Log}[a+b\,x]^2}{6\,(b\,c-a\,d)^4\,g^4\,i}-\frac{B^2\,d^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{B^2\,d^3\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{B^2\,d^3\,\mathrm{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{B^2\,d^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2}{(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,B\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{9\,(b\,c-a\,d)\,g^4\,i\,(a+b\,x)^3}+\frac{5\,B\,d\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{6\,(b\,c-a\,d)^2\,g^4\,i\,(a+b\,x)^2}-\frac{11\,B\,d^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,(b\,c-a\,d)^3\,g^4\,i\,(a+b\,x)}-\frac{11\,B\,d^3\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,(b\,c-a\,d)^4\,g^4\,i}-\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,(b\,c-a\,d)\,g^4\,i\,(a+b\,x)^3}+\frac{d\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,(b\,c-a\,d)^2\,g^4\,i\,(a+b\,x)^2}-\frac{d^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^3\,g^4\,i\,(a+b\,x)}-\frac{d^3\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{85\,B^2\,d^3\,\mathrm{Log}[c+d\,x]}{18\,(b\,c-a\,d)^4\,g^4\,i}-\frac{B^2\,d^3\,\mathrm{Log}[a+b\,x]^2\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,A\,B\,d^3\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{11\,B^2\,d^3\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{3\,(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,B^2\,d^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^4\,i}+\frac{1}{(b\,c-a\,d)^4\,g^4\,i}$$

$$2\,B^2\,d^3\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\left(\mathrm{Log}[a+b\,x]+\mathrm{Log}\left[\frac{1}{c+d\,x}\right]-\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]+$$

$$\frac{11\,B\,d^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\mathrm{Log}[c+d\,x]}{3\,(b\,c-a\,d)^4\,g^4\,i}+\frac{d^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^4\,i}+$$

$$\frac{A\,B\,d^3\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{11\,B^2\,d^3\,\mathrm{Log}[c+d\,x]^2}{6\,(b\,c-a\,d)^4\,g^4\,i}-\frac{B^2\,d^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^4\,i}+$$

$$\frac{B^2\,d^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{B^2\,d^3\,\mathrm{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,A\,B\,d^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{11\,B^2\,d^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^4\,g^4\,i}+\frac{B^2\,d^3\,\mathrm{Log}[a+b\,x]^2\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{2\,A\,B\,d^3\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{11\,B^2\,d^3\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^4\,g^4\,i}+$$

$$\frac{2\,B^2\,d^3\,\mathrm{Log}[a+b\,x]\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,A\,B\,d^3\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{11\,B^2\,d^3\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,B^2\,d^3\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}+$$

$$\frac{2\,B^2\,d^3\left(\mathrm{Log}[a+b\,x]+\mathrm{Log}\left[\frac{1}{c+d\,x}\right]-\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{2\,B^2\,d^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,B^2\,d^3\,\mathrm{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{2\,B^2\,d^3\,\mathrm{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,B^2\,d^3\,\mathrm{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4\,g^4\,i}$$

Problem 92: Result valid but suboptimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 4, 722 leaves, 18 steps):

$$\frac{2\,A\,B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)}{d^3\,i^2\,(c+d\,x)}-\frac{2\,B^2\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)}{d^3\,i^2\,(c+d\,x)}+$$
$$\frac{2\,B^2\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{d^3\,i^2\,(c+d\,x)}-\frac{b\,B\,(b\,c-a\,d)\,g^3\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^3\,i^2}-$$
$$\frac{6\,b\,B\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^4\,i^2}-$$
$$\frac{3\,b\,(b\,c-a\,d)\,g^3\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^3\,i^2}-$$
$$\frac{(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^3\,i^2\,(c+d\,x)}+\frac{b^3\,g^3\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,d^4\,i^2}-$$
$$\frac{3\,b\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^4\,i^2}+\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}[c+d\,x]}{d^4\,i^2}+$$
$$\frac{b\,B\,(b\,c-a\,d)^2\,g^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{d^4\,i^2}-\frac{6\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i^2}-$$
$$\frac{6\,b\,B\,(b\,c-a\,d)^2\,g^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i^2}-$$
$$\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{d^4\,i^2}+\frac{6\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,\mathrm{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i^2}$$

Result (type 4, 2224 leaves, 119 steps):

$$-\frac{A\,b^2\,B\,(b\,c-a\,d)\,g^3\,x}{d^3\,i^2}+\frac{2\,B^2\,(b\,c-a\,d)^3\,g^3}{d^4\,i^2\,(c+d\,x)}+\frac{2\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}[a+b\,x]}{d^4\,i^2}+$$
$$\frac{a^2\,b\,B^2\,g^3\,\mathrm{Log}[a+b\,x]^2}{2\,d^2\,i^2}+\frac{a\,b\,B^2\,(2\,b\,c-3\,a\,d)\,g^3\,\mathrm{Log}[a+b\,x]^2}{d^3\,i^2}+$$
$$\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}[a+b\,x]^2}{d^4\,i^2}-\frac{3\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]^2}{d^4\,i^2}+$$
$$\frac{3\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]^2}{d^4\,i^2}-\frac{b\,B^2\,(b\,c-a\,d)\,g^3\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{d^3\,i^2}-$$
$$\frac{2\,B\,(b\,c-a\,d)^3\,g^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^4\,i^2\,(c+d\,x)}-\frac{a^2\,b\,B\,g^3\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^2\,i^2}-$$
$$\frac{2\,a\,b\,B\,(2\,b\,c-3\,a\,d)\,g^3\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^3\,i^2}-$$
$$\frac{2\,b\,B\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^4\,i^2}-\frac{b^2\,(2\,b\,c-3\,a\,d)\,g^3\,x\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^3\,i^2}+$$

$$\frac{b^3 g^3 x^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 d^2 i^2} + \frac{(b c - a d)^3 g^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^4 i^2 (c + d x)} -$$

$$\frac{b B^2 (b c - a d)^2 g^3 \operatorname{Log}[c + d x]}{d^4 i^2} - \frac{3 b B^2 (b c - a d)^2 g^3 \operatorname{Log}[a + b x]^2 \operatorname{Log}[c + d x]}{d^4 i^2} -$$

$$\frac{b^3 B^2 c^2 g^3 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c + d x]}{d^4 i^2} - \frac{2 b^2 B^2 c (2 b c - 3 a d) g^3 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c + d x]}{d^4 i^2} -$$

$$\frac{6 A b B (b c - a d)^2 g^3 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c + d x]}{d^4 i^2} - \frac{2 b B^2 (b c - a d)^2 g^3 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c + d x]}{d^4 i^2} -$$

$$\frac{6 b B^2 (b c - a d)^2 g^3 \operatorname{Log}[a + b x] \operatorname{Log}\left[\frac{1}{c+d x}\right] \operatorname{Log}[c + d x]}{d^4 i^2} + \frac{1}{d^4 i^2}$$

$$6 b B^2 (b c - a d)^2 g^3 \operatorname{Log}\left[-\frac{d (a + b x)}{b c - a d}\right] \left(\operatorname{Log}[a + b x] + \operatorname{Log}\left[\frac{1}{c + d x}\right] - \operatorname{Log}\left[\frac{e (a + b x)}{c + d x}\right]\right) \operatorname{Log}[c + d x] +$$

$$\frac{b^3 B c^2 g^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c + d x]}{d^4 i^2} +$$

$$\frac{2 b^2 B c (2 b c - 3 a d) g^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c + d x]}{d^4 i^2} +$$

$$\frac{2 b B (b c - a d)^2 g^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c + d x]}{d^4 i^2} +$$

$$\frac{3 b (b c - a d)^2 g^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \operatorname{Log}[c + d x]}{d^4 i^2} + \frac{b^3 B^2 c^2 g^3 \operatorname{Log}[c + d x]^2}{2 d^4 i^2} +$$

$$\frac{b^2 B^2 c (2 b c - 3 a d) g^3 \operatorname{Log}[c + d x]^2}{d^4 i^2} + \frac{3 A b B (b c - a d)^2 g^3 \operatorname{Log}[c + d x]^2}{d^4 i^2} +$$

$$\frac{b B^2 (b c - a d)^2 g^3 \operatorname{Log}[c + d x]^2}{d^4 i^2} - \frac{3 b B^2 (b c - a d)^2 g^3 \operatorname{Log}[a + b x] \operatorname{Log}[c + d x]^2}{d^4 i^2} +$$

$$\frac{3 b B^2 (b c - a d)^2 g^3 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{Log}[c + d x]^2}{d^4 i^2} + \frac{b B^2 (b c - a d)^2 g^3 \operatorname{Log}[c + d x]^3}{d^4 i^2} -$$

$$\frac{a^2 b B^2 g^3 \operatorname{Log}[a + b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2} - \frac{2 a b B^2 (2 b c - 3 a d) g^3 \operatorname{Log}[a + b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^2} -$$

$$\frac{2 b B^2 (b c - a d)^2 g^3 \operatorname{Log}[a + b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^4 i^2} +$$

$$\frac{3 b B^2 (b c - a d)^2 g^3 \operatorname{Log}[a + b x]^2 \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^4 i^2} - \frac{a^2 b B^2 g^3 \operatorname{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{d^2 i^2} -$$

$$\frac{2 a b B^2 (2 b c - 3 a d) g^3 \operatorname{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{d^3 i^2} - \frac{2 b B^2 (b c - a d)^2 g^3 \operatorname{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{d^4 i^2} +$$

$$\frac{6 b B^2 (b c - a d)^2 g^3 \operatorname{Log}[a + b x] \operatorname{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{d^4 i^2} - \frac{b^3 B^2 c^2 g^3 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^4 i^2} -$$

$$\frac{2 b^2 B^2 c (2 b c-3 a d) g^3 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^4 i^2}-\frac{6 A b B (b c-a d)^2 g^3 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^4 i^2}-$$

$$\frac{2 b B^2 (b c-a d)^2 g^3 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^4 i^2}-\frac{6 b B^2 (b c-a d)^2 g^3 \text{Log}\left[\frac{1}{c+d x}\right] \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^4 i^2}+$$

$$\frac{1}{d^4 i^2} 6 b B^2 (b c-a d)^2 g^3 \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]-$$

$$\frac{6 b B^2 (b c-a d)^2 g^3 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{d^4 i^2}-\frac{6 b B^2 (b c-a d)^2 g^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{d^4 i^2}$$

Problem 93: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(c i+d i x)^2} \, dx$$

Optimal (type 4, 469 leaves, 12 steps):

$$-\frac{2 A B (b c-a d) g^2 (a+b x)}{d^2 i^2 (c+d x)}+\frac{2 B^2 (b c-a d) g^2 (a+b x)}{d^2 i^2 (c+d x)}-$$

$$\frac{2 B^2 (b c-a d) g^2 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^2 i^2 (c+d x)}+\frac{2 b B (b c-a d) g^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^3 i^2}+$$

$$\frac{b g^2 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^2 i^2}+\frac{(b c-a d) g^2 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^2 i^2 (c+d x)}+$$

$$\frac{2 b (b c-a d) g^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^3 i^2}+\frac{2 b B^2 (b c-a d) g^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^2}+$$

$$\frac{4 b B (b c-a d) g^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^2}-$$

$$\frac{4 b B^2 (b c-a d) g^2 \text{PolyLog}\left[3, \frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^2}$$

Result (type 4, 1681 leaves, 94 steps):

$$-\frac{2 B^2 (b c-a d)^2 g^2}{d^3 i^2 (c+d x)}-\frac{2 b B^2 (b c-a d) g^2 \text{Log}[a+b x]}{d^3 i^2}-$$

$$\frac{a b B^2 g^2 \text{Log}[a+b x]^2}{d^2 i^2}-\frac{b B^2 (b c-a d) g^2 \text{Log}[a+b x]^2}{d^3 i^2}+$$

$$\frac{2 b B^2 (b c-a d) g^2 \text{Log}[a+b x] \text{Log}\left[\frac{1}{c+d x}\right]^2}{d^3 i^2}-\frac{2 b B^2 (b c-a d) g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[\frac{1}{c+d x}\right]^2}{d^3 i^2}+$$

$$\frac{2 B (b c-a d)^2 g^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^3 i^2 (c+d x)}+\frac{2 a b B g^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^2 i^2}+$$

$$\frac{2\,b\,B\,(b\,c-a\,d)\,g^2\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^3\,i^2}+\frac{b^2\,g^2\,x\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^2\,i^2}-$$

$$\frac{(b\,c-a\,d)^2\,g^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^3\,i^2\,(c+d\,x)}+\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}[c+d\,x]}{d^3\,i^2}+$$

$$\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}[a+b\,x]^2\,\mathrm{Log}[c+d\,x]}{d^3\,i^2}+\frac{2\,b^2\,B^2\,c\,g^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{d^3\,i^2}+$$

$$\frac{4\,A\,b\,B\,(b\,c-a\,d)\,g^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{d^3\,i^2}+\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{d^3\,i^2}+$$

$$\frac{4\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]\,\mathrm{Log}[c+d\,x]}{d^3\,i^2}-\frac{1}{d^3\,i^2}$$

$$4\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\left(\mathrm{Log}[a+b\,x]+\mathrm{Log}\left[\frac{1}{c+d\,x}\right]-\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]-$$

$$\frac{2\,b^2\,B\,c\,g^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]}{d^3\,i^2}-\frac{2\,b\,B\,(b\,c-a\,d)\,g^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]}{d^3\,i^2}-$$

$$\frac{2\,b\,(b\,c-a\,d)\,g^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\mathrm{Log}[c+d\,x]}{d^3\,i^2}-\frac{b^2\,B^2\,c\,g^2\,\mathrm{Log}[c+d\,x]^2}{d^3\,i^2}-$$

$$\frac{2\,A\,b\,B\,(b\,c-a\,d)\,g^2\,\mathrm{Log}[c+d\,x]^2}{d^3\,i^2}-\frac{b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}[c+d\,x]^2}{d^3\,i^2}+$$

$$\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}[c+d\,x]^2}{d^3\,i^2}-\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\mathrm{Log}[c+d\,x]^2}{d^3\,i^2}-$$

$$\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}[c+d\,x]^3}{3\,d^3\,i^2}+\frac{2\,a\,b\,B^2\,g^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2\,i^2}+$$

$$\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}-\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}[a+b\,x]^2\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+$$

$$\frac{2\,a\,b\,B^2\,g^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^2\,i^2}+\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}-$$

$$\frac{4\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}[a+b\,x]\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+\frac{2\,b^2\,B^2\,c\,g^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+$$

$$\frac{4\,A\,b\,B\,(b\,c-a\,d)\,g^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+$$

$$\frac{4\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}-\frac{1}{d^3\,i^2}$$

$$4\,b\,B^2\,(b\,c-a\,d)\,g^2\,\left(\mathrm{Log}[a+b\,x]+\mathrm{Log}\left[\frac{1}{c+d\,x}\right]-\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$\frac{4\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+\frac{4\,b\,B^2\,(b\,c-a\,d)\,g^2\,\mathrm{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}$$

Problem 94: Result valid but suboptimal antiderivative.

$$\int \frac{(a g + b g x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(c i + d i x)^2} \, dx$$

Optimal (type 4, 261 leaves, 9 steps):

$$\frac{2 A B g (a + b x)}{d i^2 (c + d x)} - \frac{2 B^2 g (a + b x)}{d i^2 (c + d x)} + \frac{2 B^2 g (a + b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d i^2 (c + d x)} - \frac{g (a + b x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d i^2 (c + d x)} - \frac{b g \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^2 i^2} - \frac{2 b B g \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i^2} + \frac{2 b B^2 g \operatorname{PolyLog}\left[3, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i^2}$$

Result (type 4, 1060 leaves, 72 steps):

$$\frac{2 B^2 (b c - a d) g}{d^2 i^2 (c + d x)} + \frac{2 b B^2 g \text{Log}[a + b x]}{d^2 i^2} + \frac{b B^2 g \text{Log}[a + b x]^2}{d^2 i^2} - \frac{b B^2 g \text{Log}[a + b x] \text{Log}\left[\frac{1}{c+d x}\right]^2}{d^2 i^2} +$$

$$\frac{b B^2 g \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[\frac{1}{c+d x}\right]^2}{d^2 i^2} - \frac{2 B (b c - a d) g \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^2 i^2 (c + d x)} -$$

$$\frac{2 b B g \text{Log}[a + b x] \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^2 i^2} + \frac{(b c - a d) g \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^2 i^2 (c + d x)} -$$

$$\frac{2 b B^2 g \text{Log}[c + d x]}{d^2 i^2} - \frac{b B^2 g \text{Log}[a + b x]^2 \text{Log}[c + d x]}{d^2 i^2} - \frac{2 A b B g \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c + d x]}{d^2 i^2} -$$

$$\frac{2 b B^2 g \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c + d x]}{d^2 i^2} - \frac{2 b B^2 g \text{Log}[a + b x] \text{Log}\left[\frac{1}{c+d x}\right] \text{Log}[c + d x]}{d^2 i^2} + \frac{1}{d^2 i^2}$$

$$2 b B^2 g \text{Log}\left[-\frac{d (a + b x)}{b c - a d}\right] \left(\text{Log}[a + b x] + \text{Log}\left[\frac{1}{c + d x}\right] - \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]\right) \text{Log}[c + d x] +$$

$$\frac{2 b B g \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c + d x]}{d^2 i^2} + \frac{b g \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \text{Log}[c + d x]}{d^2 i^2} +$$

$$\frac{A b B g \text{Log}[c + d x]^2}{d^2 i^2} + \frac{b B^2 g \text{Log}[c + d x]^2}{d^2 i^2} - \frac{b B^2 g \text{Log}[a + b x] \text{Log}[c + d x]^2}{d^2 i^2} +$$

$$\frac{b B^2 g \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c + d x]^2}{d^2 i^2} + \frac{b B^2 g \text{Log}[c + d x]^3}{3 d^2 i^2} - \frac{2 b B^2 g \text{Log}[a + b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2} +$$

$$\frac{b B^2 g \text{Log}[a + b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2} - \frac{2 b B^2 g \text{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{d^2 i^2} +$$

$$\frac{2 b B^2 g \text{Log}[a + b x] \text{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{d^2 i^2} - \frac{2 A b B g \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2} -$$

$$\frac{2 b B^2 g \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2} - \frac{2 b B^2 g \text{Log}\left[\frac{1}{c+d x}\right] \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2} + \frac{1}{d^2 i^2}$$

$$2 b B^2 g \left(\text{Log}[a + b x] + \text{Log}\left[\frac{1}{c + d x}\right] - \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]\right) \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right] -$$

$$\frac{2 b B^2 g \text{PolyLog}\left[3, -\frac{d (a+b x)}{b c-a d}\right]}{d^2 i^2} - \frac{2 b B^2 g \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2}$$

Problem 95: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(c i + d i x)^2} \, dx$$

Optimal (type 3, 152 leaves, 4 steps):

$$-\frac{2\,A\,B\,(a+b\,x)}{(b\,c-a\,d)\,i^2\,(c+d\,x)}+\frac{2\,B^2\,(a+b\,x)}{(b\,c-a\,d)\,i^2\,(c+d\,x)}-\frac{2\,B^2\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(b\,c-a\,d)\,i^2\,(c+d\,x)}+\frac{(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)\,i^2\,(c+d\,x)}$$

Result (type 4, 472 leaves, 26 steps):

$$-\frac{2\,B^2}{d\,i^2\,(c+d\,x)}-\frac{2\,b\,B^2\,\mathrm{Log}[a+b\,x]}{d\,(b\,c-a\,d)\,i^2}-\frac{b\,B^2\,\mathrm{Log}[a+b\,x]^2}{d\,(b\,c-a\,d)\,i^2}+\frac{2\,B\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d\,i^2\,(c+d\,x)}+\frac{2\,b\,B\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d\,(b\,c-a\,d)\,i^2}-\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d\,i^2\,(c+d\,x)}+\frac{2\,b\,B^2\,\mathrm{Log}[c+d\,x]}{d\,(b\,c-a\,d)\,i^2}+\frac{2\,b\,B^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{d\,(b\,c-a\,d)\,i^2}-\frac{2\,b\,B\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\mathrm{Log}[c+d\,x]}{d\,(b\,c-a\,d)\,i^2}-\frac{b\,B^2\,\mathrm{Log}[c+d\,x]^2}{d\,(b\,c-a\,d)\,i^2}+\frac{2\,b\,B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)\,i^2}+\frac{2\,b\,B^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)\,i^2}+\frac{2\,b\,B^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)\,i^2}$$

Problem 96: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 214 leaves, 7 steps):

$$\frac{2\,A\,B\,d\,(a+b\,x)}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}-\frac{2\,B^2\,d\,(a+b\,x)}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}+\frac{2\,B^2\,d\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}-\frac{d\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}+\frac{b\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^3}{3\,B\,(b\,c-a\,d)^2\,g\,i^2}$$

Result (type 4, 1687 leaves, 87 steps):

$$\frac{2 B^2}{(b c-a d) g i^2 (c+d x)}+\frac{2 b B^2 \operatorname{Log}[a+b x]}{(b c-a d)^2 g i^2}-\frac{A b B \operatorname{Log}[a+b x]^2}{(b c-a d)^2 g i^2}+\frac{b B^2 \operatorname{Log}[a+b x]^2}{(b c-a d)^2 g i^2}+$$

$$\frac{b B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^2 g i^2}-\frac{b B^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^2 g i^2}-\frac{b B^2 \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^2 g i^2}-$$

$$\frac{b B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^2 g i^2}-\frac{2 B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d) g i^2 (c+d x)}-\frac{2 b B \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^2 g i^2}+$$

$$\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d) g i^2 (c+d x)}+\frac{b \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^2 g i^2}-\frac{2 b B^2 \operatorname{Log}[c+d x]}{(b c-a d)^2 g i^2}+$$

$$\frac{b B^2 \operatorname{Log}[a+b x]^2 \operatorname{Log}[c+d x]}{(b c-a d)^2 g i^2}+\frac{2 A b B \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d)^2 g i^2}-$$

$$\frac{2 b B^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d)^2 g i^2}+\frac{2 b B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{1}{c+d x}\right] \operatorname{Log}[c+d x]}{(b c-a d)^2 g i^2}-\frac{1}{(b c-a d)^2 g i^2}$$

$$2 b B^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \left(\operatorname{Log}[a+b x]+\operatorname{Log}\left[\frac{1}{c+d x}\right]-\operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]+$$

$$\frac{2 b B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}[c+d x]}{(b c-a d)^2 g i^2}-\frac{b \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \operatorname{Log}[c+d x]}{(b c-a d)^2 g i^2}-$$

$$\frac{A b B \operatorname{Log}[c+d x]^2}{(b c-a d)^2 g i^2}+\frac{b B^2 \operatorname{Log}[c+d x]^2}{(b c-a d)^2 g i^2}+\frac{b B^2 \operatorname{Log}[a+b x] \operatorname{Log}[c+d x]^2}{(b c-a d)^2 g i^2}-$$

$$\frac{b B^2 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{Log}[c+d x]^2}{(b c-a d)^2 g i^2}-\frac{b B^2 \operatorname{Log}[c+d x]^3}{3 (b c-a d)^2 g i^2}+\frac{2 A b B \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}-$$

$$\frac{2 b B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}-\frac{b B^2 \operatorname{Log}[a+b x]^2 \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}+\frac{2 A b B \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}-$$

$$\frac{2 b B^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}-\frac{2 b B^2 \operatorname{Log}[a+b x] \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}+$$

$$\frac{2 A b B \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}-\frac{2 b B^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}+\frac{2 b B^2 \operatorname{Log}\left[\frac{1}{c+d x}\right] \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}-$$

$$\frac{2 b B^2 \left(\operatorname{Log}[a+b x]+\operatorname{Log}\left[\frac{1}{c+d x}\right]-\operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}+$$

$$\frac{2 b B^2 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^2 g i^2}+\frac{2 b B^2 \operatorname{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}+$$

$$\frac{2 b B^2 \operatorname{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g i^2}+\frac{2 b B^2 \operatorname{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^2 g i^2}$$

Problem 97: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 365 leaves, 10 steps):

$$-\frac{2\,A\,B\,d^2\,(a+b\,x)}{(b\,c-a\,d)^3\,g^2\,i^2\,(c+d\,x)}+\frac{2\,B^2\,d^2\,(a+b\,x)}{(b\,c-a\,d)^3\,g^2\,i^2\,(c+d\,x)}-\frac{2\,b^2\,B^2\,(c+d\,x)}{(b\,c-a\,d)^3\,g^2\,i^2\,(a+b\,x)}-\frac{2\,B^2\,d^2\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(b\,c-a\,d)^3\,g^2\,i^2\,(c+d\,x)}-\frac{2\,b^2\,B\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g^2\,i^2\,(a+b\,x)}+\frac{d^2\,(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^3\,g^2\,i^2\,(c+d\,x)}-\frac{b^2\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^3\,g^2\,i^2\,(a+b\,x)}-\frac{2\,b\,d\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^3}{3\,B\,(b\,c-a\,d)^3\,g^2\,i^2}$$

Result (type 4, 1521 leaves, 113 steps):

$$-\frac{2\,b\,B^2}{(b\,c-a\,d)^2\,g^2\,i^2\,(a+b\,x)}-\frac{2\,B^2\,d}{(b\,c-a\,d)^2\,g^2\,i^2\,(c+d\,x)}-\frac{4\,b\,B^2\,d\,\text{Log}[a+b\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}+$$

$$\frac{2\,A\,b\,B\,d\,\text{Log}[a+b\,x]^2}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{2\,b\,B^2\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{1}{c+d\,x}\right]^2}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{2\,b\,B^2\,d\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[\frac{1}{c+d\,x}\right]^2}{(b\,c-a\,d)^3\,g^2\,i^2}+$$

$$\frac{2\,b\,B^2\,d\,\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{2\,b\,B^2\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2}{(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{2\,b\,B\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^2\,g^2\,i^2\,(a+b\,x)}+\frac{2\,B\,d\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^2\,g^2\,i^2\,(c+d\,x)}-\frac{b\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^2\,g^2\,i^2\,(a+b\,x)}-$$

$$\frac{d\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^2\,g^2\,i^2\,(c+d\,x)}-\frac{2\,b\,d\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{4\,b\,B^2\,d\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{2\,b\,B^2\,d\,\text{Log}[a+b\,x]^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{4\,A\,b\,B\,d\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{4\,b\,B^2\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{1}{(b\,c-a\,d)^3\,g^2\,i^2}$$

$$4\,b\,B^2\,d\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]+$$

$$\frac{2\,b\,d\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{2\,A\,b\,B\,d\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{2\,b\,B^2\,d\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{2\,b\,B^2\,d\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{2\,b\,B^2\,d\,\text{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{4\,A\,b\,B\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{2\,b\,B^2\,d\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{4\,A\,b\,B\,d\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{4\,b\,B^2\,d\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{4\,A\,b\,B\,d\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{4\,b\,B^2\,d\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{1}{(b\,c-a\,d)^3\,g^2\,i^2}$$

$$4\,b\,B^2\,d\,\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$\frac{4\,b\,B^2\,d\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{4\,b\,B^2\,d\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{4\,b\,B^2\,d\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{4\,b\,B^2\,d\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}$$

Problem 98: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^3 (c i+d i x)^2} \, dx$$

Optimal (type 3, 523 leaves, 12 steps):

$$\frac{2 A B d^3 (a+b x)}{(b c-a d)^4 g^3 i^2 (c+d x)}-\frac{2 B^2 d^3 (a+b x)}{(b c-a d)^4 g^3 i^2 (c+d x)}+\frac{6 b^2 B^2 d (c+d x)}{(b c-a d)^4 g^3 i^2 (a+b x)}-\frac{b^3 B^2 (c+d x)^2}{4 (b c-a d)^4 g^3 i^2 (a+b x)^2}+\frac{2 B^2 d^3 (a+b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(b c-a d)^4 g^3 i^2 (c+d x)}+\frac{6 b^2 B d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^3 i^2 (a+b x)}-\frac{b^3 B (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^4 g^3 i^2 (a+b x)^2}-\frac{d^3 (a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^4 g^3 i^2 (c+d x)}+\frac{3 b^2 d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^4 g^3 i^2 (a+b x)}-\frac{b^3 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^4 g^3 i^2 (a+b x)^2}+\frac{b d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^3}{B (b c-a d)^4 g^3 i^2}$$

Result (type 4, 2071 leaves, 143 steps):

$$-\frac{b B^2}{4 (b c-a d)^2 g^3 i^2 (a+b x)^2}+\frac{11 b B^2 d}{2 (b c-a d)^3 g^3 i^2 (a+b x)}+\frac{2 B^2 d^2}{(b c-a d)^3 g^3 i^2 (c+d x)}+\frac{15 b B^2 d^2 \operatorname{Log}[a+b x]}{2 (b c-a d)^4 g^3 i^2}-\frac{3 A b B d^2 \operatorname{Log}[a+b x]^2}{(b c-a d)^4 g^3 i^2}-\frac{3 b B^2 d^2 \operatorname{Log}[a+b x]^2}{2 (b c-a d)^4 g^3 i^2}+\frac{3 b B^2 d^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^4 g^3 i^2}-\frac{3 b B^2 d^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^4 g^3 i^2}-\frac{3 b B^2 d^2 \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^4 g^3 i^2}-\frac{3 b B^2 d^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^4 g^3 i^2}-\frac{b B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^2 g^3 i^2 (a+b x)^2}+\frac{5 b B d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^3 i^2 (a+b x)}-\frac{2 B d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^3 g^3 i^2 (c+d x)}+\frac{3 b B d^2 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^3 i^2}-\frac{b \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^2 g^3 i^2 (a+b x)^2}+\frac{2 b d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^3 g^3 i^2 (a+b x)}+\frac{d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^3 g^3 i^2 (c+d x)}+\frac{3 b d^2 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^4 g^3 i^2}-$$

$$\frac{15\,b\,B^2\,d^2\,\text{Log}[c+d\,x]}{2\,(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B^2\,d^2\,\text{Log}[a+b\,x]^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^3\,i^2}+$$

$$\frac{6\,A\,b\,B\,d^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B^2\,d^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^3\,i^2}+$$

$$\frac{6\,b\,B^2\,d^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{1}{(b\,c-a\,d)^4\,g^3\,i^2}$$

$$6\,b\,B^2\,d^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{Log}[c+d\,x]-$$

$$\frac{3\,b\,B\,d^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{3\,b\,d^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^3\,i^2}-$$

$$\frac{3\,A\,b\,B\,d^2\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{3\,b\,B^2\,d^2\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B^2\,d^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^3\,i^2}-$$

$$\frac{3\,b\,B^2\,d^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{b\,B^2\,d^2\,\text{Log}[c+d\,x]^3}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{6\,A\,b\,B\,d^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+$$

$$\frac{3\,b\,B^2\,d^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{3\,b\,B^2\,d^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+$$

$$\frac{6\,A\,b\,B\,d^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B^2\,d^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}-$$

$$\frac{6\,b\,B^2\,d^2\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{6\,A\,b\,B\,d^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+$$

$$\frac{3\,b\,B^2\,d^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{6\,b\,B^2\,d^2\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{1}{(b\,c-a\,d)^4\,g^3\,i^2}$$

$$6\,b\,B^2\,d^2\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$\frac{6\,b\,B^2\,d^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{6\,b\,B^2\,d^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+$$

$$\frac{6\,b\,B^2\,d^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{6\,b\,B^2\,d^2\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}$$

Problem 99: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^4\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 682 leaves, 14 steps):

$$-\frac{2 A B d^4 (a+b x)}{(b c-a d)^5 g^4 i^2 (c+d x)}+\frac{2 B^2 d^4 (a+b x)}{(b c-a d)^5 g^4 i^2 (c+d x)}-\frac{12 b^2 B^2 d^2 (c+d x)}{(b c-a d)^5 g^4 i^2 (a+b x)}+\frac{b^3 B^2 d (c+d x)^2}{(b c-a d)^5 g^4 i^2 (a+b x)^2}-\frac{2 b^4 B^2 (c+d x)^3}{27 (b c-a d)^5 g^4 i^2 (a+b x)^3}-\frac{2 B^2 d^4 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(b c-a d)^5 g^4 i^2 (c+d x)}-\frac{12 b^2 B d^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^5 g^4 i^2 (a+b x)}+\frac{2 b^3 B d (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^5 g^4 i^2 (a+b x)^2}-\frac{2 b^4 B (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{9 (b c-a d)^5 g^4 i^2 (a+b x)^3}+\frac{d^4 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^5 g^4 i^2 (c+d x)}-\frac{6 b^2 d^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^5 g^4 i^2 (a+b x)}+\frac{2 b^3 d (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^5 g^4 i^2 (a+b x)^2}-\frac{b^4 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 (b c-a d)^5 g^4 i^2 (a+b x)^3}-\frac{4 b d^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^3}{3 B (b c-a d)^5 g^4 i^2}$$

Result (type 4, 2222 leaves, 177 steps):

$$-\frac{2 b B^2}{27 (b c-a d)^2 g^4 i^2 (a+b x)^3}+\frac{7 b B^2 d}{9 (b c-a d)^3 g^4 i^2 (a+b x)^2}-\frac{92 b B^2 d^2}{9 (b c-a d)^4 g^4 i^2 (a+b x)}-\frac{2 B^2 d^3}{(b c-a d)^4 g^4 i^2 (c+d x)}-\frac{110 b B^2 d^3 \text{Log}[a+b x]}{9 (b c-a d)^5 g^4 i^2}+\frac{4 A b B d^3 \text{Log}[a+b x]^2}{(b c-a d)^5 g^4 i^2}+\frac{10 b B^2 d^3 \text{Log}[a+b x]^2}{3 (b c-a d)^5 g^4 i^2}-\frac{4 b B^2 d^3 \text{Log}[a+b x] \text{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^5 g^4 i^2}+\frac{4 b B^2 d^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^5 g^4 i^2}+\frac{4 b B^2 d^3 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^5 g^4 i^2}+\frac{4 b B^2 d^3 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^5 g^4 i^2}-\frac{2 b B \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{9 (b c-a d)^2 g^4 i^2 (a+b x)^3}+\frac{4 b B d \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b c-a d)^3 g^4 i^2 (a+b x)^2}-\frac{26 b B d^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b c-a d)^4 g^4 i^2 (a+b x)}+\frac{2 B d^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^4 i^2 (c+d x)}-\frac{20 b B d^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b c-a d)^5 g^4 i^2}-\frac{b \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 (b c-a d)^2 g^4 i^2 (a+b x)^3}+\frac{b d \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^3 g^4 i^2 (a+b x)^2}-\frac{3 b d^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^4 g^4 i^2 (a+b x)}-\frac{d^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^4 g^4 i^2 (c+d x)}-\frac{4 b d^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^5 g^4 i^2}+\frac{110 b B^2 d^3 \text{Log}[c+d x]}{9 (b c-a d)^5 g^4 i^2}-\frac{4 b B^2 d^3 \text{Log}[a+b x]^2 \text{Log}[c+d x]}{(b c-a d)^5 g^4 i^2}-$$

$$\frac{8\,A\,b\,B\,d^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^5\,g^4\,i^2}-\frac{20\,b\,B^2\,d^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{3\,(b\,c-a\,d)^5\,g^4\,i^2}-$$

$$\frac{8\,b\,B^2\,d^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^5\,g^4\,i^2}+\frac{1}{(b\,c-a\,d)^5\,g^4\,i^2}$$

$$8\,b\,B^2\,d^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]+$$

$$\frac{20\,b\,B\,d^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{3\,(b\,c-a\,d)^5\,g^4\,i^2}+\frac{4\,b\,d^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^5\,g^4\,i^2}+$$

$$\frac{4\,A\,b\,B\,d^3\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^5\,g^4\,i^2}+\frac{10\,b\,B^2\,d^3\,\text{Log}[c+d\,x]^2}{3\,(b\,c-a\,d)^5\,g^4\,i^2}-\frac{4\,b\,B^2\,d^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^5\,g^4\,i^2}+$$

$$\frac{4\,b\,B^2\,d^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^5\,g^4\,i^2}+\frac{4\,b\,B^2\,d^3\,\text{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)^5\,g^4\,i^2}-\frac{8\,A\,b\,B\,d^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}-$$

$$\frac{20\,b\,B^2\,d^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^5\,g^4\,i^2}+\frac{4\,b\,B^2\,d^3\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}-$$

$$\frac{8\,A\,b\,B\,d^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}-\frac{20\,b\,B^2\,d^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^5\,g^4\,i^2}+$$

$$\frac{8\,b\,B^2\,d^3\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}-\frac{8\,A\,b\,B\,d^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}-$$

$$\frac{20\,b\,B^2\,d^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^5\,g^4\,i^2}-\frac{8\,b\,B^2\,d^3\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}+\frac{1}{(b\,c-a\,d)^5\,g^4\,i^2}$$

$$8\,b\,B^2\,d^3\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$\frac{8\,b\,B^2\,d^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}-\frac{8\,b\,B^2\,d^3\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}-$$

$$\frac{8\,b\,B^2\,d^3\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}-\frac{8\,b\,B^2\,d^3\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}$$

Problem 100: Result valid but suboptimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 4, 635 leaves, 14 steps) :

$$\frac{B^2 (b c-a d) g^3 (a+b x)^2}{4 d^2 i^3 (c+d x)^2}-\frac{4 A b B (b c-a d) g^3 (a+b x)}{d^3 i^3 (c+d x)}+\frac{4 b B^2 (b c-a d) g^3 (a+b x)}{d^3 i^3 (c+d x)}-\frac{4 b B^2 (b c-a d) g^3 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^3 i^3 (c+d x)}-\frac{B (b c-a d) g^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^2 i^3 (c+d x)^2}+\frac{2 b^2 B (b c-a d) g^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^4 i^3}+\frac{b^2 g^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^3 i^3}+\frac{(b c-a d) g^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 d^2 i^3 (c+d x)^2}+\frac{2 b (b c-a d) g^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^3 i^3 (c+d x)}+\frac{3 b^2 (b c-a d) g^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^4 i^3}+\frac{2 b^2 B^2 (b c-a d) g^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}+\frac{6 b^2 B (b c-a d) g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}-\frac{6 b^2 B^2 (b c-a d) g^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}$$

Result (type 4, 1890 leaves, 124 steps):

$$\frac{B^2 (b c-a d)^3 g^3}{4 d^4 i^3 (c+d x)^2}-\frac{9 b B^2 (b c-a d)^2 g^3}{2 d^4 i^3 (c+d x)}-\frac{9 b^2 B^2 (b c-a d) g^3 \text{Log}[a+b x]}{2 d^4 i^3}-\frac{a b^2 B^2 g^3 \text{Log}[a+b x]^2}{d^3 i^3}-\frac{5 b^2 B^2 (b c-a d) g^3 \text{Log}[a+b x]^2}{2 d^4 i^3}+\frac{3 b^2 B^2 (b c-a d) g^3 \text{Log}[a+b x] \text{Log}\left[\frac{1}{c+d x}\right]^2}{d^4 i^3}-\frac{3 b^2 B^2 (b c-a d) g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[\frac{1}{c+d x}\right]^2}{d^4 i^3}-\frac{B (b c-a d)^3 g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^4 i^3 (c+d x)^2}+\frac{5 b B (b c-a d)^2 g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^4 i^3 (c+d x)}+\frac{2 a b^2 B g^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^3 i^3}+\frac{5 b^2 B (b c-a d) g^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^4 i^3}+\frac{b^3 g^3 x \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^3 i^3}+\frac{(b c-a d)^3 g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 d^4 i^3 (c+d x)^2}-\frac{3 b (b c-a d)^2 g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^4 i^3 (c+d x)}+\frac{9 b^2 B^2 (b c-a d) g^3 \text{Log}[c+d x]}{2 d^4 i^3}+\frac{3 b^2 B^2 (b c-a d) g^3 \text{Log}[a+b x]^2 \text{Log}[c+d x]}{d^4 i^3}+\frac{2 b^3 B^2 c g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^4 i^3}+\frac{6 A b^2 B (b c-a d) g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^4 i^3}+\frac{5 b^2 B^2 (b c-a d) g^3 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^4 i^3}+$$

$$\frac{6\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{Log}[c+d\,x]}{d^4\,i^3}-\frac{1}{d^4\,i^3}$$

$$6\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{Log}[c+d\,x]-$$

$$\frac{2\,b^3\,B\,c\,g^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{d^4\,i^3}-\frac{5\,b^2\,B\,(b\,c-a\,d)\,g^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{d^4\,i^3}-$$

$$\frac{3\,b^2\,(b\,c-a\,d)\,g^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}[c+d\,x]}{d^4\,i^3}-\frac{b^3\,B^2\,c\,g^3\,\text{Log}[c+d\,x]^2}{d^4\,i^3}-$$

$$\frac{3\,A\,b^2\,B\,(b\,c-a\,d)\,g^3\,\text{Log}[c+d\,x]^2}{d^4\,i^3}-\frac{5\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{Log}[c+d\,x]^2}{2\,d^4\,i^3}+$$

$$\frac{3\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{d^4\,i^3}-\frac{3\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x]^2}{d^4\,i^3}-$$

$$\frac{b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{Log}[c+d\,x]^3}{d^4\,i^3}+\frac{2\,a\,b^2\,B^2\,g^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^3}+$$

$$\frac{5\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}-\frac{3\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}+$$

$$\frac{2\,a\,b^2\,B^2\,g^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^3\,i^3}+\frac{5\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}-$$

$$\frac{6\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}+\frac{2\,b^3\,B^2\,c\,g^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}+$$

$$\frac{6\,A\,b^2\,B\,(b\,c-a\,d)\,g^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}+\frac{5\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}+$$

$$\frac{6\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}-\frac{1}{d^4\,i^3}$$

$$6\,b^2\,B^2\,(b\,c-a\,d)\,g^3\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$\frac{6\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}+\frac{6\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}$$

Problem 101: Result valid but suboptimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 4, 410 leaves, 11 steps):

$$-\frac{B^2 g^2 (a+b x)^2}{4 d i^3 (c+d x)^2}+\frac{2 A b B g^2 (a+b x)}{d^2 i^3 (c+d x)}-\frac{2 b B^2 g^2 (a+b x)}{d^2 i^3 (c+d x)}+\frac{2 b B^2 g^2 (a+b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^2 i^3 (c+d x)}+$$
$$\frac{B g^2 (a+b x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d i^3 (c+d x)^2}-\frac{g^2 (a+b x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 d i^3 (c+d x)^2}-$$
$$\frac{b g^2 (a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^2 i^3 (c+d x)}-\frac{b^2 g^2 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^3 i^3}-$$
$$\frac{2 b^2 B g^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^3}+\frac{2 b^2 B^2 g^2 \operatorname{PolyLog}\left[3, \frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^3}$$

Result (type 4, 1328 leaves, 102 steps):

$$-\frac{B^2 (b c-a d)^2 g^2}{4 d^3 i^3 (c+d x)^2}+\frac{5 b B^2 (b c-a d) g^2}{2 d^3 i^3 (c+d x)}+\frac{5 b^2 B^2 g^2 \text{Log}[a+b x]}{2 d^3 i^3}+\frac{3 b^2 B^2 g^2 \text{Log}[a+b x]^2}{2 d^3 i^3}-$$

$$\frac{b^2 B^2 g^2 \text{Log}[a+b x] \text{Log}\left[\frac{1}{c+d x}\right]^2}{d^3 i^3}+\frac{b^2 B^2 g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[\frac{1}{c+d x}\right]^2}{d^3 i^3}+$$

$$\frac{B (b c-a d)^2 g^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^3 i^3 (c+d x)^2}-\frac{3 b B (b c-a d) g^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^3 i^3 (c+d x)}-$$

$$\frac{3 b^2 B g^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^3 i^3}-\frac{(b c-a d)^2 g^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 d^3 i^3 (c+d x)^2}+$$

$$\frac{2 b (b c-a d) g^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^3 i^3 (c+d x)}-\frac{5 b^2 B^2 g^2 \text{Log}[c+d x]}{2 d^3 i^3}-$$

$$\frac{b^2 B^2 g^2 \text{Log}[a+b x]^2 \text{Log}[c+d x]}{d^3 i^3}-\frac{2 A b^2 B g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^3 i^3}-$$

$$\frac{3 b^2 B^2 g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^3 i^3}-\frac{2 b^2 B^2 g^2 \text{Log}[a+b x] \text{Log}\left[\frac{1}{c+d x}\right] \text{Log}[c+d x]}{d^3 i^3}+\frac{1}{d^3 i^3}$$

$$2 b^2 B^2 g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]+$$

$$\frac{3 b^2 B g^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c+d x]}{d^3 i^3}+\frac{b^2 g^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \text{Log}[c+d x]}{d^3 i^3}+$$

$$\frac{A b^2 B g^2 \text{Log}[c+d x]^2}{d^3 i^3}+\frac{3 b^2 B^2 g^2 \text{Log}[c+d x]^2}{2 d^3 i^3}-\frac{b^2 B^2 g^2 \text{Log}[a+b x] \text{Log}[c+d x]^2}{d^3 i^3}+$$

$$\frac{b^2 B^2 g^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x]^2}{d^3 i^3}+\frac{b^2 B^2 g^2 \text{Log}[c+d x]^3}{3 d^3 i^3}-\frac{3 b^2 B^2 g^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}+$$

$$\frac{b^2 B^2 g^2 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}-\frac{3 b^2 B^2 g^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^3 i^3}+$$

$$\frac{2 b^2 B^2 g^2 \text{Log}[a+b x] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^3 i^3}-\frac{2 A b^2 B g^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}-$$

$$\frac{3 b^2 B^2 g^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}-\frac{2 b^2 B^2 g^2 \text{Log}\left[\frac{1}{c+d x}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}+\frac{1}{d^3 i^3}$$

$$2 b^2 B^2 g^2 \left(\text{Log}[a+b x]+\text{Log}\left[\frac{1}{c+d x}\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-$$

$$\frac{2 b^2 B^2 g^2 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{d^3 i^3}-\frac{2 b^2 B^2 g^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}$$

Problem 102: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a g + b g x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(c i + d i x)^3} \, dx$$

Optimal (type 3, 141 leaves, 3 steps):

$$\frac{B^2 g (a + b x)^2}{4 (b c - a d) i^3 (c + d x)^2} - \frac{B g (a + b x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c - a d) i^3 (c + d x)^2} + \frac{g (a + b x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c - a d) i^3 (c + d x)^2}$$

Result (type 4, 634 leaves, 58 steps):

$$\frac{B^2 (b c - a d) g}{4 d^2 i^3 (c + d x)^2} - \frac{b B^2 g}{2 d^2 i^3 (c + d x)} - \frac{b^2 B^2 g \text{Log}[a + b x]}{2 d^2 (b c - a d) i^3} -$$
$$\frac{b^2 B^2 g \text{Log}[a + b x]^2}{2 d^2 (b c - a d) i^3} - \frac{B (b c - a d) g \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^2 i^3 (c + d x)^2} + \frac{b B g \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^2 i^3 (c + d x)} +$$
$$\frac{b^2 B g \text{Log}[a + b x] \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^2 (b c - a d) i^3} + \frac{(b c - a d) g \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 d^2 i^3 (c + d x)^2} -$$
$$\frac{b g \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^2 i^3 (c + d x)} + \frac{b^2 B^2 g \text{Log}[c + d x]}{2 d^2 (b c - a d) i^3} + \frac{b^2 B^2 g \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c + d x]}{d^2 (b c - a d) i^3} -$$
$$\frac{b^2 B g \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}[c + d x]}{d^2 (b c - a d) i^3} - \frac{b^2 B^2 g \text{Log}[c + d x]^2}{2 d^2 (b c - a d) i^3} +$$
$$\frac{b^2 B^2 g \text{Log}[a + b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2 (b c - a d) i^3} + \frac{b^2 B^2 g \text{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{d^2 (b c - a d) i^3} + \frac{b^2 B^2 g \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^2 (b c - a d) i^3}$$

Problem 103: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(c i + d i x)^3} \, dx$$

Optimal (type 3, 296 leaves, 8 steps):

$$-\frac{B^2 d (a + b x)^2}{4 (b c - a d)^2 i^3 (c + d x)^2} - \frac{2 A b B (a + b x)}{(b c - a d)^2 i^3 (c + d x)} + \frac{2 b B^2 (a + b x)}{(b c - a d)^2 i^3 (c + d x)} -$$
$$\frac{2 b B^2 (a + b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(b c - a d)^2 i^3 (c + d x)} + \frac{B d (a + b x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c - a d)^2 i^3 (c + d x)^2} -$$
$$\frac{d (a + b x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c - a d)^2 i^3 (c + d x)^2} + \frac{b (a + b x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c - a d)^2 i^3 (c + d x)}$$

Result (type 4, 577 leaves, 30 steps):

$$-\frac{B^2}{4\,d\,i^3\,(c+d\,x)^2}-\frac{3\,b\,B^2}{2\,d\,(b\,c-a\,d)\,i^3\,(c+d\,x)}-\frac{3\,b^2\,B^2\,\mathrm{Log}[a+b\,x]}{2\,d\,(b\,c-a\,d)^2\,i^3}-\frac{b^2\,B^2\,\mathrm{Log}[a+b\,x]^2}{2\,d\,(b\,c-a\,d)^2\,i^3}+\frac{B\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,d\,i^3\,(c+d\,x)^2}+\frac{b\,B\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d\,(b\,c-a\,d)\,i^3\,(c+d\,x)}+\frac{b^2\,B\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d\,(b\,c-a\,d)^2\,i^3}-\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,d\,i^3\,(c+d\,x)^2}+\frac{3\,b^2\,B^2\,\mathrm{Log}[c+d\,x]}{2\,d\,(b\,c-a\,d)^2\,i^3}+\frac{b^2\,B^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}[c+d\,x]}{d\,(b\,c-a\,d)^2\,i^3}-\frac{b^2\,B\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\mathrm{Log}[c+d\,x]}{d\,(b\,c-a\,d)^2\,i^3}-\frac{b^2\,B^2\,\mathrm{Log}[c+d\,x]^2}{2\,d\,(b\,c-a\,d)^2\,i^3}+\frac{b^2\,B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)^2\,i^3}+\frac{b^2\,B^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)^2\,i^3}+\frac{b^2\,B^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)^2\,i^3}$$

Problem 104: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)\,(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 3, 375 leaves, 15 steps):

$$\frac{B^2\,d^2\,(a+b\,x)^2}{4\,(b\,c-a\,d)^3\,g\,i^3\,(c+d\,x)^2}+\frac{4\,A\,b\,B\,d\,(a+b\,x)}{(b\,c-a\,d)^3\,g\,i^3\,(c+d\,x)}-\frac{4\,b\,B^2\,d\,(a+b\,x)}{(b\,c-a\,d)^3\,g\,i^3\,(c+d\,x)}+\frac{4\,b\,B^2\,d\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(b\,c-a\,d)^3\,g\,i^3\,(c+d\,x)}-\frac{B\,d^2\,(a+b\,x)^2\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)^3\,g\,i^3\,(c+d\,x)^2}+\frac{d^2\,(a+b\,x)^2\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,(b\,c-a\,d)^3\,g\,i^3\,(c+d\,x)^2}-\frac{2\,b\,d\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^3\,g\,i^3\,(c+d\,x)}+\frac{b^2\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^3}{3\,B\,(b\,c-a\,d)^3\,g\,i^3}$$

Result (type 4, 1899 leaves, 117 steps):

$$\frac{B^2}{4\,(b\,c-a\,d)\,g\,i^3\,(c+d\,x)^2}+\frac{7\,b\,B^2}{2\,(b\,c-a\,d)^2\,g\,i^3\,(c+d\,x)}+\frac{7\,b^2\,B^2\,\mathrm{Log}[a+b\,x]}{2\,(b\,c-a\,d)^3\,g\,i^3}-\frac{A\,b^2\,B\,\mathrm{Log}[a+b\,x]^2}{(b\,c-a\,d)^3\,g\,i^3}+\frac{3\,b^2\,B^2\,\mathrm{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^3\,g\,i^3}+\frac{b^2\,B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]^2}{(b\,c-a\,d)^3\,g\,i^3}-\frac{b^2\,B^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}\left[\frac{1}{c+d\,x}\right]^2}{(b\,c-a\,d)^3\,g\,i^3}-\frac{b^2\,B^2\,\mathrm{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2}{(b\,c-a\,d)^3\,g\,i^3}-\frac{b^2\,B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2}{(b\,c-a\,d)^3\,g\,i^3}-\frac{B\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,(b\,c-a\,d)\,g\,i^3\,(c+d\,x)^2}-\frac{3\,b\,B\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^2\,g\,i^3\,(c+d\,x)}-\frac{3\,b^2\,B\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(b\,c-a\,d)^3\,g\,i^3}+$$

$$\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,(b\,c-a\,d)\,g\,i^3\,(c+d\,x)^2}+\frac{b\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^2\,g\,i^3\,(c+d\,x)}+\frac{b^2\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^3\,g\,i^3}-$$

$$\frac{7\,b^2\,B^2\,\text{Log}[c+d\,x]}{2\,(b\,c-a\,d)^3\,g\,i^3}+\frac{b^2\,B^2\,\text{Log}[a+b\,x]^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g\,i^3}+\frac{2\,A\,b^2\,B\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g\,i^3}-$$

$$\frac{3\,b^2\,B^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g\,i^3}+\frac{2\,b^2\,B^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g\,i^3}-\frac{1}{(b\,c-a\,d)^3\,g\,i^3}$$

$$2\,b^2\,B^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{Log}[c+d\,x]+$$

$$\frac{3\,b^2\,B\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g\,i^3}-\frac{b^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g\,i^3}-$$

$$\frac{A\,b^2\,B\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g\,i^3}+\frac{3\,b^2\,B^2\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^3\,g\,i^3}+\frac{b^2\,B^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g\,i^3}-$$

$$\frac{b^2\,B^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g\,i^3}-\frac{b^2\,B^2\,\text{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)^3\,g\,i^3}+\frac{2\,A\,b^2\,B\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}-$$

$$\frac{3\,b^2\,B^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}-\frac{b^2\,B^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}+$$

$$\frac{2\,A\,b^2\,B\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}-\frac{3\,b^2\,B^2\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}-$$

$$\frac{2\,b^2\,B^2\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}+\frac{2\,A\,b^2\,B\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}-$$

$$\frac{3\,b^2\,B^2\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}+\frac{2\,b^2\,B^2\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}-$$

$$\frac{2\,b^2\,B^2\,\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}+$$

$$\frac{2\,b^2\,B^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{PolyLog}\left[2,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^3\,g\,i^3}+\frac{2\,b^2\,B^2\,\text{PolyLog}\left[3,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}+$$

$$\frac{2\,b^2\,B^2\,\text{PolyLog}\left[3,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g\,i^3}+\frac{2\,b^2\,B^2\,\text{PolyLog}\left[3,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^3\,g\,i^3}$$

Problem 105: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g + b g x)^2 (c i + d i x)^3} \, dx$$

Optimal (type 3, 525 leaves, 12 steps):

$$-\frac{B^2 d^3 (a + b x)^2}{4 (b c - a d)^4 g^2 i^3 (c + d x)^2} - \frac{6 A b B d^2 (a + b x)}{(b c - a d)^4 g^2 i^3 (c + d x)} + \frac{6 b B^2 d^2 (a + b x)}{(b c - a d)^4 g^2 i^3 (c + d x)} - \frac{2 b^3 B^2 (c + d x)}{(b c - a d)^4 g^2 i^3 (a + b x)} - \frac{6 b B^2 d^2 (a + b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(b c - a d)^4 g^2 i^3 (c + d x)} + \frac{B d^3 (a + b x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c - a d)^4 g^2 i^3 (c + d x)^2} - \frac{2 b^3 B (c + d x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c - a d)^4 g^2 i^3 (a + b x)} - \frac{d^3 (a + b x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c - a d)^4 g^2 i^3 (c + d x)^2} + \frac{3 b d^2 (a + b x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c - a d)^4 g^2 i^3 (c + d x)} - \frac{b^3 (c + d x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c - a d)^4 g^2 i^3 (a + b x)} - \frac{b^2 d \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^3}{B (b c - a d)^4 g^2 i^3}$$

Result (type 4, 2071 leaves, 143 steps):

$$-\frac{2 b^2 B^2}{(b c - a d)^3 g^2 i^3 (a + b x)} - \frac{B^2 d}{4 (b c - a d)^2 g^2 i^3 (c + d x)^2} - \frac{11 b B^2 d}{2 (b c - a d)^3 g^2 i^3 (c + d x)} - \frac{15 b^2 B^2 d \operatorname{Log}[a + b x]}{2 (b c - a d)^4 g^2 i^3} + \frac{3 A b^2 B d \operatorname{Log}[a + b x]^2}{(b c - a d)^4 g^2 i^3} - \frac{3 b^2 B^2 d \operatorname{Log}[a + b x]^2}{2 (b c - a d)^4 g^2 i^3} - \frac{3 b^2 B^2 d \operatorname{Log}[a + b x] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c - a d)^4 g^2 i^3} + \frac{3 b^2 B^2 d \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c - a d)^4 g^2 i^3} + \frac{3 b^2 B^2 d \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c - a d)^4 g^2 i^3} + \frac{3 b^2 B^2 d \operatorname{Log}[a + b x] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c - a d)^4 g^2 i^3} - \frac{2 b^2 B \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c - a d)^3 g^2 i^3 (a + b x)} + \frac{B d \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c - a d)^2 g^2 i^3 (c + d x)^2} + \frac{5 b B d \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c - a d)^3 g^2 i^3 (c + d x)} + \frac{3 b^2 B d \operatorname{Log}[a + b x] \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c - a d)^4 g^2 i^3} - \frac{b^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c - a d)^3 g^2 i^3 (a + b x)} - \frac{d \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c - a d)^2 g^2 i^3 (c + d x)^2} - \frac{2 b d \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c - a d)^3 g^2 i^3 (c + d x)} - \frac{3 b^2 d \operatorname{Log}[a + b x] \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c - a d)^4 g^2 i^3} + \frac{15 b^2 B^2 d \operatorname{Log}[c + d x]}{2 (b c - a d)^4 g^2 i^3} - \frac{3 b^2 B^2 d \operatorname{Log}[a + b x]^2 \operatorname{Log}[c + d x]}{(b c - a d)^4 g^2 i^3} -$$

$$\frac{6\,A\,b^2\,B\,d\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^2\,i^3}+\frac{3\,b^2\,B^2\,d\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^2\,i^3}-$$

$$\frac{6\,b^2\,B^2\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^2\,i^3}+\frac{1}{(b\,c-a\,d)^4\,g^2\,i^3}$$

$$6\,b^2\,B^2\,d\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]-$$

$$\frac{3\,b^2\,B\,d\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^2\,i^3}+\frac{3\,b^2\,d\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^2\,i^3}+$$

$$\frac{3\,A\,b^2\,B\,d\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^2\,i^3}-\frac{3\,b^2\,B^2\,d\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^4\,g^2\,i^3}-\frac{3\,b^2\,B^2\,d\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^2\,i^3}+$$

$$\frac{3\,b^2\,B^2\,d\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^2\,i^3}+\frac{b^2\,B^2\,d\,\text{Log}[c+d\,x]^3}{(b\,c-a\,d)^4\,g^2\,i^3}-\frac{6\,A\,b^2\,B\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}+$$

$$\frac{3\,b^2\,B^2\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}+\frac{3\,b^2\,B^2\,d\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}-$$

$$\frac{6\,A\,b^2\,B\,d\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}+\frac{3\,b^2\,B^2\,d\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}+$$

$$\frac{6\,b^2\,B^2\,d\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}-\frac{6\,A\,b^2\,B\,d\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}+$$

$$\frac{3\,b^2\,B^2\,d\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}-\frac{6\,b^2\,B^2\,d\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}+\frac{1}{(b\,c-a\,d)^4\,g^2\,i^3}$$

$$6\,b^2\,B^2\,d\,\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$\frac{6\,b^2\,B^2\,d\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}-\frac{6\,b^2\,B^2\,d\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}-$$

$$\frac{6\,b^2\,B^2\,d\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}-\frac{6\,b^2\,B^2\,d\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4\,g^2\,i^3}$$

Problem 106: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 3, 685 leaves, 14 steps):

$$\frac{B^2 d^4 (a+b x)^2}{4 (b c-a d)^5 g^3 i^3 (c+d x)^2}+\frac{8 A b B d^3 (a+b x)}{(b c-a d)^5 g^3 i^3 (c+d x)}-\frac{8 b B^2 d^3 (a+b x)}{(b c-a d)^5 g^3 i^3 (c+d x)}+$$
$$\frac{8 b^3 B^2 d (c+d x)}{(b c-a d)^5 g^3 i^3 (a+b x)}-\frac{b^4 B^2 (c+d x)^2}{4 (b c-a d)^5 g^3 i^3 (a+b x)^2}+\frac{8 b B^2 d^3 (a+b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(b c-a d)^5 g^3 i^3 (c+d x)}-$$
$$\frac{B d^4 (a+b x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^5 g^3 i^3 (c+d x)^2}+\frac{8 b^3 B d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^5 g^3 i^3 (a+b x)}-$$
$$\frac{b^4 B (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^5 g^3 i^3 (a+b x)^2}+\frac{d^4 (a+b x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^5 g^3 i^3 (c+d x)^2}-$$
$$\frac{4 b d^3 (a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^5 g^3 i^3 (c+d x)}+\frac{4 b^3 d (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^5 g^3 i^3 (a+b x)}-$$
$$\frac{b^4 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^5 g^3 i^3 (a+b x)^2}+\frac{2 b^2 d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^3}{B (b c-a d)^5 g^3 i^3}$$

Result (type 4, 1921 leaves, 173 steps):

$$-\frac{b^2 B^2}{4 (b c-a d)^3 g^3 i^3 (a+b x)^2}+\frac{15 b^2 B^2 d}{2 (b c-a d)^4 g^3 i^3 (a+b x)}+\frac{B^2 d^2}{4 (b c-a d)^3 g^3 i^3 (c+d x)^2}+$$
$$\frac{15 b B^2 d^2}{2 (b c-a d)^4 g^3 i^3 (c+d x)}+\frac{15 b^2 B^2 d^2 \operatorname{Log}[a+b x]}{(b c-a d)^5 g^3 i^3}-\frac{6 A b^2 B d^2 \operatorname{Log}[a+b x]^2}{(b c-a d)^5 g^3 i^3}+$$
$$\frac{6 b^2 B^2 d^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^5 g^3 i^3}-\frac{6 b^2 B^2 d^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^5 g^3 i^3}-$$
$$\frac{6 b^2 B^2 d^2 \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^5 g^3 i^3}-\frac{6 b^2 B^2 d^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^5 g^3 i^3}-$$
$$\frac{b^2 B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^3 g^3 i^3 (a+b x)^2}+\frac{7 b^2 B d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^3 i^3 (a+b x)}-$$
$$\frac{B d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^3 g^3 i^3 (c+d x)^2}-\frac{7 b B d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^4 g^3 i^3 (c+d x)}-\frac{b^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^3 g^3 i^3 (a+b x)^2}+$$
$$\frac{3 b^2 d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^4 g^3 i^3 (a+b x)}+\frac{d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^3 g^3 i^3 (c+d x)^2}+\frac{3 b d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^4 g^3 i^3 (c+d x)}+$$
$$\frac{6 b^2 d^2 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^5 g^3 i^3}-\frac{15 b^2 B^2 d^2 \operatorname{Log}[c+d x]}{(b c-a d)^5 g^3 i^3}+$$
$$\frac{6 b^2 B^2 d^2 \operatorname{Log}[a+b x]^2 \operatorname{Log}[c+d x]}{(b c-a d)^5 g^3 i^3}+\frac{12 A b^2 B d^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d)^5 g^3 i^3}+$$

$$\frac{12\,b^2\,B^2\,d^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^5\,g^3\,i^3}-\frac{1}{(b\,c-a\,d)^5\,g^3\,i^3}$$

$$12\,b^2\,B^2\,d^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\left(\mathrm{Log}[a+b\,x]+\mathrm{Log}\left[\frac{1}{c+d\,x}\right]-\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\mathrm{Log}[c+d\,x]-$$

$$\frac{6\,b^2\,d^2\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^5\,g^3\,i^3}-\frac{6\,A\,b^2\,B\,d^2\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^5\,g^3\,i^3}+$$

$$\frac{6\,b^2\,B^2\,d^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^5\,g^3\,i^3}-\frac{6\,b^2\,B^2\,d^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^5\,g^3\,i^3}-\frac{2\,b^2\,B^2\,d^2\,\mathrm{Log}[c+d\,x]^3}{(b\,c-a\,d)^5\,g^3\,i^3}+$$

$$\frac{12\,A\,b^2\,B\,d^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^3\,i^3}-\frac{6\,b^2\,B^2\,d^2\,\mathrm{Log}[a+b\,x]^2\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^3\,i^3}+$$

$$\frac{12\,A\,b^2\,B\,d^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^3\,i^3}-\frac{12\,b^2\,B^2\,d^2\,\mathrm{Log}[a+b\,x]\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^3\,i^3}+$$

$$\frac{12\,A\,b^2\,B\,d^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^3\,i^3}+\frac{12\,b^2\,B^2\,d^2\,\mathrm{Log}\left[\frac{1}{c+d\,x}\right]\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^3\,i^3}-\frac{1}{(b\,c-a\,d)^5\,g^3\,i^3}$$

$$12\,b^2\,B^2\,d^2\left(\mathrm{Log}[a+b\,x]+\mathrm{Log}\left[\frac{1}{c+d\,x}\right]-\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$\frac{12\,b^2\,B^2\,d^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^5\,g^3\,i^3}+\frac{12\,b^2\,B^2\,d^2\,\mathrm{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^3\,i^3}+$$

$$\frac{12\,b^2\,B^2\,d^2\,\mathrm{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\,g^3\,i^3}+\frac{12\,b^2\,B^2\,d^2\,\mathrm{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^5\,g^3\,i^3}$$

Problem 107: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^4\,(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 3, 851 leaves, 16 steps):

$$-\frac{B^2 d^5 (a+b x)^2}{4 (b c-a d)^6 g^4 i^3 (c+d x)^2}-\frac{10 A b B d^4 (a+b x)}{(b c-a d)^6 g^4 i^3 (c+d x)}+\frac{10 b B^2 d^4 (a+b x)}{(b c-a d)^6 g^4 i^3 (c+d x)}-\frac{20 b^3 B^2 d^2 (c+d x)}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 B^2 d (c+d x)^2}{4 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{2 b^5 B^2 (c+d x)^3}{27 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{10 b B^2 d^4 (a+b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{(b c-a d)^6 g^4 i^3 (c+d x)}+\frac{B d^5 (a+b x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^6 g^4 i^3 (c+d x)^2}-\frac{20 b^3 B d^2 (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 B d (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{2 b^5 B (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{9 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{d^5 (a+b x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^6 g^4 i^3 (c+d x)^2}+\frac{5 b d^4 (a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^6 g^4 i^3 (c+d x)}-\frac{10 b^3 d^2 (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 d (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{b^5 (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{10 b^2 d^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^3}{3 B (b c-a d)^6 g^4 i^3}$$

Result (type 4, 2454 leaves, 207 steps):

$$-\frac{2 b^2 B^2}{27 (b c-a d)^3 g^4 i^3 (a+b x)^3}+\frac{37 b^2 B^2 d}{36 (b c-a d)^4 g^4 i^3 (a+b x)^2}-\frac{319 b^2 B^2 d^2}{18 (b c-a d)^5 g^4 i^3 (a+b x)}-\frac{B^2 d^3}{4 (b c-a d)^4 g^4 i^3 (c+d x)^2}-\frac{19 b B^2 d^3}{2 (b c-a d)^5 g^4 i^3 (c+d x)}-\frac{245 b^2 B^2 d^3 \operatorname{Log}[a+b x]}{9 (b c-a d)^6 g^4 i^3}+\frac{10 A b^2 B d^3 \operatorname{Log}[a+b x]^2}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 B^2 d^3 \operatorname{Log}[a+b x]^2}{3 (b c-a d)^6 g^4 i^3}-\frac{10 b^2 B^2 d^3 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 B^2 d^3 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[\frac{1}{c+d x}\right]^2}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 B^2 d^3 \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 B^2 d^3 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(b c-a d)^6 g^4 i^3}-\frac{2 b^2 B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{9 (b c-a d)^3 g^4 i^3 (a+b x)^3}+\frac{11 b^2 B d \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 (b c-a d)^4 g^4 i^3 (a+b x)^2}-\frac{47 b^2 B d^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b c-a d)^5 g^4 i^3 (a+b x)}+\frac{B d^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 (b c-a d)^4 g^4 i^3 (c+d x)^2}+\frac{9 b B d^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b c-a d)^5 g^4 i^3 (c+d x)}-$$

$$\frac{20\,b^2\,B\,d^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,(b\,c-a\,d)^6\,g^4\,i^3}-\frac{b^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,(b\,c-a\,d)^3\,g^4\,i^3\,(a+b\,x)^3}+$$

$$\frac{3\,b^2\,d\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,(b\,c-a\,d)^4\,g^4\,i^3\,(a+b\,x)^2}-\frac{6\,b^2\,d^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^5\,g^4\,i^3\,(a+b\,x)}-\frac{d^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,(b\,c-a\,d)^4\,g^4\,i^3\,(c+d\,x)^2}-$$

$$\frac{4\,b\,d^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^5\,g^4\,i^3\,(c+d\,x)}-\frac{10\,b^2\,d^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(b\,c-a\,d)^6\,g^4\,i^3}+$$

$$\frac{245\,b^2\,B^2\,d^3\,\text{Log}[c+d\,x]}{9\,(b\,c-a\,d)^6\,g^4\,i^3}-\frac{10\,b^2\,B^2\,d^3\,\text{Log}[a+b\,x]^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^6\,g^4\,i^3}-$$

$$\frac{20\,A\,b^2\,B\,d^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^6\,g^4\,i^3}-\frac{20\,b^2\,B^2\,d^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{3\,(b\,c-a\,d)^6\,g^4\,i^3}-$$

$$\frac{20\,b^2\,B^2\,d^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^6\,g^4\,i^3}+\frac{1}{(b\,c-a\,d)^6\,g^4\,i^3}$$

$$20\,b^2\,B^2\,d^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]+$$

$$\frac{20\,b^2\,B\,d^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]}{3\,(b\,c-a\,d)^6\,g^4\,i^3}+\frac{10\,b^2\,d^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^6\,g^4\,i^3}+$$

$$\frac{10\,A\,b^2\,B\,d^3\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^6\,g^4\,i^3}+\frac{10\,b^2\,B^2\,d^3\,\text{Log}[c+d\,x]^2}{3\,(b\,c-a\,d)^6\,g^4\,i^3}-\frac{10\,b^2\,B^2\,d^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^6\,g^4\,i^3}+$$

$$\frac{10\,b^2\,B^2\,d^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^6\,g^4\,i^3}+\frac{10\,b^2\,B^2\,d^3\,\text{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)^6\,g^4\,i^3}-$$

$$\frac{20\,A\,b^2\,B\,d^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^6\,g^4\,i^3}-\frac{20\,b^2\,B^2\,d^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^6\,g^4\,i^3}+$$

$$\frac{10\,b^2\,B^2\,d^3\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^6\,g^4\,i^3}-\frac{20\,A\,b^2\,B\,d^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^6\,g^4\,i^3}-$$

$$\frac{20\,b^2\,B^2\,d^3\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^6\,g^4\,i^3}+\frac{20\,b^2\,B^2\,d^3\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^6\,g^4\,i^3}-$$

$$\frac{20\,A\,b^2\,B\,d^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^6\,g^4\,i^3}-\frac{20\,b^2\,B^2\,d^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^6\,g^4\,i^3}-$$

$$\frac{20\,b^2\,B^2\,d^3\,\text{Log}\left[\frac{1}{c+d\,x}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^6\,g^4\,i^3}+\frac{1}{(b\,c-a\,d)^6\,g^4\,i^3}$$

$$20\,b^2\,B^2\,d^3\,\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{1}{c+d\,x}\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$\frac{20\, b^2\, B^2\, d^3\, \text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\, \text{PolyLog}\left[2,\, 1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^6\, g^4\, i^3} - \frac{20\, b^2\, B^2\, d^3\, \text{PolyLog}\left[3,\, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^6\, g^4\, i^3} - \frac{20\, b^2\, B^2\, d^3\, \text{PolyLog}\left[3,\, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^6\, g^4\, i^3} - \frac{20\, b^2\, B^2\, d^3\, \text{PolyLog}\left[3,\, 1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^6\, g^4\, i^3}$$

Problem 108: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)dx$$

Optimal (type 3, 223 leaves, 5 steps):

$$-\frac{B\,(b\,c-a\,d)^4\,g^3\,i\,n\,x}{20\,b\,d^3}+\frac{B\,(b\,c-a\,d)^3\,g^3\,i\,n\,(a+b\,x)^2}{40\,b^2\,d^2}-\frac{B\,(b\,c-a\,d)^2\,g^3\,i\,n\,(a+b\,x)^3}{60\,b^2\,d}+\frac{g^3\,i\,(a+b\,x)^4\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,b}+\frac{(b\,c-a\,d)\,g^3\,i\,(a+b\,x)^4\left(A-B\,n+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{20\,b^2}+\frac{B\,(b\,c-a\,d)^5\,g^3\,i\,n\,\text{Log}[c+d\,x]}{20\,b^2\,d^4}$$

Result (type 3, 243 leaves, 10 steps):

$$-\frac{B\,(b\,c-a\,d)^4\,g^3\,i\,n\,x}{20\,b\,d^3}+\frac{B\,(b\,c-a\,d)^3\,g^3\,i\,n\,(a+b\,x)^2}{40\,b^2\,d^2}-\frac{B\,(b\,c-a\,d)^2\,g^3\,i\,n\,(a+b\,x)^3}{60\,b^2\,d}-\frac{B\,(b\,c-a\,d)\,g^3\,i\,n\,(a+b\,x)^4}{20\,b^2}+\frac{(b\,c-a\,d)\,g^3\,i\,(a+b\,x)^4\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,b^2}+\frac{d\,g^3\,i\,(a+b\,x)^5\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,b^2}+\frac{B\,(b\,c-a\,d)^5\,g^3\,i\,n\,\text{Log}[c+d\,x]}{20\,b^2\,d^4}$$

Problem 109: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)dx$$

Optimal (type 3, 190 leaves, 5 steps):

$$\frac{B\,(b\,c-a\,d)^3\,g^2\,i\,n\,x}{12\,b\,d^2}-\frac{B\,(b\,c-a\,d)^2\,g^2\,i\,n\,(a+b\,x)^2}{24\,b^2\,d}+\frac{g^2\,i\,(a+b\,x)^3\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,b}+\frac{(b\,c-a\,d)\,g^2\,i\,(a+b\,x)^3\left(A-B\,n+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{12\,b^2}-\frac{B\,(b\,c-a\,d)^4\,g^2\,i\,n\,\text{Log}[c+d\,x]}{12\,b^2\,d^3}$$

Result (type 3, 210 leaves, 10 steps):

$$\frac{B\,(b\,c-a\,d)^3\,g^2\,i\,n\,x}{12\,b\,d^2}-\frac{B\,(b\,c-a\,d)^2\,g^2\,i\,n\,(a+b\,x)^2}{24\,b^2\,d}-\frac{B\,(b\,c-a\,d)\,g^2\,i\,n\,(a+b\,x)^3}{12\,b^2}+\frac{(b\,c-a\,d)\,g^2\,i\,(a+b\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b^2}+\frac{d\,g^2\,i\,(a+b\,x)^4\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,b^2}-\frac{B\,(b\,c-a\,d)^4\,g^2\,i\,n\,\text{Log}[c+d\,x]}{12\,b^2\,d^3}$$

Problem 110: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)\,(c\,i+d\,i\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,dx$$

Optimal (type 3, 149 leaves, 5 steps):

$$-\frac{B\,(b\,c-a\,d)^2\,g\,i\,n\,x}{6\,b\,d}+\frac{g\,i\,(a+b\,x)^2\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b}+\frac{(b\,c-a\,d)\,g\,i\,(a+b\,x)^2\,\left(A-B\,n+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,b^2}+\frac{B\,(b\,c-a\,d)^3\,g\,i\,n\,\text{Log}[c+d\,x]}{6\,b^2\,d^2}$$

Result (type 3, 311 leaves, 13 steps):

$$a\,A\,c\,g\,i\,x-\frac{1}{3}\,b\,B\,\left(\frac{a^2}{b^2}-\frac{c^2}{d^2}\right)\,d\,g\,i\,n\,x-\frac{B\,(b\,c-a\,d)\,(b\,c+a\,d)\,g\,i\,n\,x}{2\,b\,d}-\frac{1}{6}\,B\,(b\,c-a\,d)\,g\,i\,n\,x^2+\frac{a^3\,B\,d\,g\,i\,n\,\text{Log}[a+b\,x]}{3\,b^2}-\frac{a^2\,B\,(b\,c+a\,d)\,g\,i\,n\,\text{Log}[a+b\,x]}{2\,b^2}+\frac{a\,B\,c\,g\,i\,(a+b\,x)\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b}+\frac{1}{2}\,(b\,c+a\,d)\,g\,i\,x^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)+\frac{1}{3}\,b\,d\,g\,i\,x^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)-\frac{b\,B\,c^3\,g\,i\,n\,\text{Log}[c+d\,x]}{3\,d^2}-\frac{a\,B\,c\,(b\,c-a\,d)\,g\,i\,n\,\text{Log}[c+d\,x]}{b\,d}+\frac{B\,c^2\,(b\,c+a\,d)\,g\,i\,n\,\text{Log}[c+d\,x]}{2\,d^2}$$

Problem 112: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 141 leaves, 6 steps):

$$\frac{i\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b\,g}-\frac{(b\,c-a\,d)\,i\,\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\left(A-B\,n+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,g}+\frac{B\,(b\,c-a\,d)\,i\,n\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b^2\,g}$$

Result (type 4, 223 leaves, 13 steps):

$$\frac{A\,d\,i\,x}{b\,g}-\frac{B\,(b\,c-a\,d)\,i\,n\,\mathrm{Log}[a+b\,x]^2}{2\,b^2\,g}+\frac{B\,d\,i\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b^2\,g}+\frac{(b\,c-a\,d)\,i\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,g}-\frac{B\,(b\,c-a\,d)\,i\,n\,\mathrm{Log}[c+d\,x]}{b^2\,g}+\frac{B\,(b\,c-a\,d)\,i\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,g}+\frac{B\,(b\,c-a\,d)\,i\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^2\,g}$$

Problem 113: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 4, 150 leaves, 5 steps):

$$-\frac{B\,i\,n\,(c+d\,x)}{b\,g^2\,(a+b\,x)}-\frac{i\,(c+d\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b\,g^2\,(a+b\,x)}-\frac{d\,i\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2}+\frac{B\,d\,i\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2}$$

Result (type 4, 233 leaves, 14 steps):

$$-\frac{B\,(b\,c-a\,d)\,i\,n}{b^2\,g^2\,(a+b\,x)}-\frac{B\,d\,i\,n\,\mathrm{Log}[a+b\,x]}{b^2\,g^2}-\frac{B\,d\,i\,n\,\mathrm{Log}[a+b\,x]^2}{2\,b^2\,g^2}-\frac{(b\,c-a\,d)\,i\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,g^2\,(a+b\,x)}+\frac{d\,i\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,g^2}+\frac{B\,d\,i\,n\,\mathrm{Log}[c+d\,x]}{b^2\,g^2}+\frac{B\,d\,i\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,g^2}+\frac{B\,d\,i\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^2\,g^2}$$

Problem 114: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 3, 89 leaves, 2 steps):

$$-\frac{B\,i\,n\,(c+d\,x)^2}{4\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2}-\frac{i\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2}$$

Result (type 3, 201 leaves, 10 steps):

$$-\frac{B\,(b\,c-a\,d)\,i\,n}{4\,b^2\,g^3\,(a+b\,x)^2}-\frac{B\,d\,i\,n}{2\,b^2\,g^3\,(a+b\,x)}-\frac{B\,d^2\,i\,n\,\mathrm{Log}[a+b\,x]}{2\,b^2\,(b\,c-a\,d)\,g^3}-\frac{(b\,c-a\,d)\,i\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^2\,g^3\,(a+b\,x)^2}-\frac{d\,i\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,g^3\,(a+b\,x)}+\frac{B\,d^2\,i\,n\,\mathrm{Log}[c+d\,x]}{2\,b^2\,(b\,c-a\,d)\,g^3}$$

Problem 115: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 3, 181 leaves, 5 steps):

$$\frac{B\,d\,i\,n\,(c+d\,x)^2}{4\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^2}-\frac{b\,B\,i\,n\,(c+d\,x)^3}{9\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3}+\frac{d\,i\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^2}-\frac{b\,i\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3}$$

Result (type 3, 236 leaves, 10 steps):

$$-\frac{B\,(b\,c-a\,d)\,i\,n}{9\,b^2\,g^4\,(a+b\,x)^3}-\frac{B\,d\,i\,n}{12\,b^2\,g^4\,(a+b\,x)^2}+\frac{B\,d^2\,i\,n}{6\,b^2\,(b\,c-a\,d)\,g^4\,(a+b\,x)}+\frac{B\,d^3\,i\,n\,\mathrm{Log}[a+b\,x]}{6\,b^2\,(b\,c-a\,d)^2\,g^4}-\frac{(b\,c-a\,d)\,i\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b^2\,g^4\,(a+b\,x)^3}-\frac{d\,i\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^2\,g^4\,(a+b\,x)^2}-\frac{B\,d^3\,i\,n\,\mathrm{Log}[c+d\,x]}{6\,b^2\,(b\,c-a\,d)^2\,g^4}$$

Problem 116: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^5}\,dx$$

Optimal (type 3, 281 leaves, 5 steps):

$$-\frac{B\,d^2\,i\,n\,(c+d\,x)^2}{4\,(b\,c-a\,d)^3\,g^5\,(a+b\,x)^2}+\frac{2\,b\,B\,d\,i\,n\,(c+d\,x)^3}{9\,(b\,c-a\,d)^3\,g^5\,(a+b\,x)^3}-\frac{b^2\,B\,i\,n\,(c+d\,x)^4}{16\,(b\,c-a\,d)^3\,g^5\,(a+b\,x)^4}-\frac{d^2\,i\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)^3\,g^5\,(a+b\,x)^2}+\frac{2\,b\,d\,i\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,c-a\,d)^3\,g^5\,(a+b\,x)^3}-\frac{b^2\,i\,(c+d\,x)^4\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,(b\,c-a\,d)^3\,g^5\,(a+b\,x)^4}$$

Result (type 3, 269 leaves, 10 steps):

$$-\frac{B (b c-a d) i n}{16 b^2 g^5 (a+b x)^4}-\frac{B d i n}{36 b^2 g^5 (a+b x)^3}+\frac{B d^2 i n}{24 b^2 (b c-a d) g^5 (a+b x)^2}-\frac{B d^3 i n}{12 b^2 (b c-a d)^2 g^5 (a+b x)}-\frac{B d^4 i n \operatorname{Log}[a+b x]}{12 b^2 (b c-a d)^3 g^5}-\frac{(b c-a d) i \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 b^2 g^5 (a+b x)^4}-\frac{d i \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^2 g^5 (a+b x)^3}+\frac{B d^4 i n \operatorname{Log}[c+d x]}{12 b^2 (b c-a d)^3 g^5}$$

Problem 117: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^3 (c i+d i x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) dx$$

Optimal (type 3, 442 leaves, 5 steps):

$$\frac{B (b c-a d)^5 g^3 i^2 n x}{60 b^2 d^3}+\frac{B (b c-a d)^4 g^3 i^2 n (c+d x)^2}{120 b d^4}-\frac{19 B (b c-a d)^3 g^3 i^2 n (c+d x)^3}{180 d^4}+\frac{13 b B (b c-a d)^2 g^3 i^2 n (c+d x)^4}{120 d^4}-\frac{b^2 B (b c-a d) g^3 i^2 n (c+d x)^5}{30 d^4}-\frac{(b c-a d)^3 g^3 i^2 (c+d x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d^4}+\frac{3 b (b c-a d)^2 g^3 i^2 (c+d x)^4 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 d^4}-\frac{3 b^2 (b c-a d) g^3 i^2 (c+d x)^5 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{5 d^4}+\frac{b^3 g^3 i^2 (c+d x)^6 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 d^4}+\frac{B (b c-a d)^6 g^3 i^2 n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{60 b^3 d^4}+\frac{B (b c-a d)^6 g^3 i^2 n \operatorname{Log}[c+d x]}{60 b^3 d^4}$$

Result (type 3, 345 leaves, 14 steps):

$$-\frac{B (b c-a d)^5 g^3 i^2 n x}{60 b^2 d^3}+\frac{B (b c-a d)^4 g^3 i^2 n (a+b x)^2}{120 b^3 d^2}-\frac{B (b c-a d)^3 g^3 i^2 n (a+b x)^3}{180 b^3 d}-\frac{7 B (b c-a d)^2 g^3 i^2 n (a+b x)^4}{120 b^3}-\frac{B d (b c-a d) g^3 i^2 n (a+b x)^5}{30 b^3}+\frac{(b c-a d)^2 g^3 i^2 (a+b x)^4 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 b^3}+\frac{2 d (b c-a d) g^3 i^2 (a+b x)^5 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{5 b^3}+\frac{d^2 g^3 i^2 (a+b x)^6 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b^3}+\frac{B (b c-a d)^6 g^3 i^2 n \operatorname{Log}[c+d x]}{60 b^3 d^4}$$

Problem 118: Result valid but suboptimal antiderivative.

$$\int (a g + b g x)^2 (c i + d i x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right) dx$$

Optimal (type 3, 352 leaves, 5 steps):

$$-\frac{B (b c - a d)^4 g^2 i^2 n x}{30 b^2 d^2} - \frac{B (b c - a d)^3 g^2 i^2 n (c + d x)^2}{60 b d^3} + \frac{B (b c - a d)^2 g^2 i^2 n (c + d x)^3}{10 d^3} - \frac{b B (b c - a d) g^2 i^2 n (c + d x)^4}{20 d^3} + \frac{(b c - a d)^2 g^2 i^2 (c + d x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d^3} - \frac{b (b c - a d) g^2 i^2 (c + d x)^4 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^3} + \frac{b^2 g^2 i^2 (c + d x)^5 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{5 d^3} - \frac{B (b c - a d)^5 g^2 i^2 n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{30 b^3 d^3} - \frac{B (b c - a d)^5 g^2 i^2 n \operatorname{Log}[c + d x]}{30 b^3 d^3}$$

Result (type 3, 310 leaves, 14 steps):

$$\frac{B (b c - a d)^4 g^2 i^2 n x}{30 b^2 d^2} - \frac{B (b c - a d)^3 g^2 i^2 n (a + b x)^2}{60 b^3 d} - \frac{B (b c - a d)^2 g^2 i^2 n (a + b x)^3}{10 b^3} - \frac{B d (b c - a d) g^2 i^2 n (a + b x)^4}{20 b^3} + \frac{(b c - a d)^2 g^2 i^2 (a + b x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^3} + \frac{d (b c - a d) g^2 i^2 (a + b x)^4 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^3} + \frac{d^2 g^2 i^2 (a + b x)^5 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{5 b^3} - \frac{B (b c - a d)^5 g^2 i^2 n \operatorname{Log}[c + d x]}{30 b^3 d^3}$$

Problem 119: Result valid but suboptimal antiderivative.

$$\int (a g + b g x) (c i + d i x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right) dx$$

Optimal (type 3, 250 leaves, 5 steps):

$$\frac{B (b c - a d)^3 g i^2 n x}{12 b^2 d} + \frac{B (b c - a d)^2 g i^2 n (c + d x)^2}{24 b d^2} - \frac{B (b c - a d) g i^2 n (c + d x)^3}{12 d^2} - \frac{(b c - a d) g i^2 (c + d x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d^2} + \frac{b g i^2 (c + d x)^4 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 d^2} + \frac{B (b c - a d)^4 g i^2 n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^3 d^2} + \frac{B (b c - a d)^4 g i^2 n \operatorname{Log}[c + d x]}{12 b^3 d^2}$$

Result (type 3, 210 leaves, 10 steps):

$$\frac{B\,(b\,c-a\,d)^3\,g\,i^2\,n\,x}{12\,b^2\,d}+\frac{B\,(b\,c-a\,d)^2\,g\,i^2\,n\,(c+d\,x)^2}{24\,b\,d^2}-\frac{B\,(b\,c-a\,d)\,g\,i^2\,n\,(c+d\,x)^3}{12\,d^2}+\frac{B\,(b\,c-a\,d)^4\,g\,i^2\,n\,\mathrm{Log}[a+b\,x]}{12\,b^3\,d^2}-\frac{(b\,c-a\,d)\,g\,i^2\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,d^2}+\frac{b\,g\,i^2\,(c+d\,x)^4\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,d^2}$$

Problem 121: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 289 leaves, 10 steps):

$$-\frac{B\,d\,(b\,c-a\,d)\,i^2\,n\,x}{2\,b^2\,g}+\frac{d\,(b\,c-a\,d)\,i^2\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^3\,g}+\frac{i^2\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b\,g}-\frac{B\,(b\,c-a\,d)^2\,i^2\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{2\,b^3\,g}-\frac{3\,B\,(b\,c-a\,d)^2\,i^2\,n\,\mathrm{Log}[c+d\,x]}{2\,b^3\,g}-\frac{(b\,c-a\,d)^2\,i^2\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}+\frac{B\,(b\,c-a\,d)^2\,i^2\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}$$

Result (type 4, 369 leaves, 18 steps):

$$\frac{A\,d\,(b\,c-a\,d)\,i^2\,x}{b^2\,g}-\frac{B\,d\,(b\,c-a\,d)\,i^2\,n\,x}{2\,b^2\,g}-\frac{B\,(b\,c-a\,d)^2\,i^2\,n\,\mathrm{Log}[a+b\,x]}{2\,b^3\,g}-\frac{B\,(b\,c-a\,d)^2\,i^2\,n\,\mathrm{Log}[g\,(a+b\,x)]^2}{2\,b^3\,g}+\frac{B\,d\,(b\,c-a\,d)\,i^2\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b^3\,g}+\frac{i^2\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b\,g}-\frac{B\,(b\,c-a\,d)^2\,i^2\,n\,\mathrm{Log}[c+d\,x]}{b^3\,g}+\frac{(b\,c-a\,d)^2\,i^2\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[a\,g+b\,g\,x]}{b^3\,g}+\frac{B\,(b\,c-a\,d)^2\,i^2\,n\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[a\,g+b\,g\,x]}{b^3\,g}+\frac{B\,(b\,c-a\,d)^2\,i^2\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^3\,g}$$

Problem 122: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 4, 259 leaves, 8 steps):

$$-\frac{B\,(b\,c-a\,d)\,i^2\,n\,(c+d\,x)}{b^2\,g^2\,(a+b\,x)}+\frac{d^2\,i^2\,(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^3\,g^2}-\frac{(b\,c-a\,d)\,i^2\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,g^2\,(a+b\,x)}-\frac{B\,d\,(b\,c-a\,d)\,i^2\,n\,\text{Log}[c+d\,x]}{b^3\,g^2}-\frac{2\,d\,(b\,c-a\,d)\,i^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^2}+\frac{2\,B\,d\,(b\,c-a\,d)\,i^2\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^2}$$

Result (type 4, 327 leaves, 17 steps):

$$\frac{A\,d^2\,i^2\,x}{b^2\,g^2}-\frac{B\,(b\,c-a\,d)^2\,i^2\,n}{b^3\,g^2\,(a+b\,x)}-\frac{B\,d\,(b\,c-a\,d)\,i^2\,n\,\text{Log}[a+b\,x]}{b^3\,g^2}-\frac{B\,d\,(b\,c-a\,d)\,i^2\,n\,\text{Log}[a+b\,x]^2}{b^3\,g^2}+\frac{B\,d^2\,i^2\,(a+b\,x)\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b^3\,g^2}-\frac{(b\,c-a\,d)^2\,i^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^3\,g^2\,(a+b\,x)}+\frac{2\,d\,(b\,c-a\,d)\,i^2\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^3\,g^2}+\frac{2\,B\,d\,(b\,c-a\,d)\,i^2\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^3\,g^2}+\frac{2\,B\,d\,(b\,c-a\,d)\,i^2\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^3\,g^2}$$

Problem 123: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 4, 242 leaves, 7 steps):

$$-\frac{B\,d\,i^2\,n\,(c+d\,x)}{b^2\,g^3\,(a+b\,x)}-\frac{B\,i^2\,n\,(c+d\,x)^2}{4\,b\,g^3\,(a+b\,x)^2}-\frac{d\,i^2\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,g^3\,(a+b\,x)}-\frac{i^2\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b\,g^3\,(a+b\,x)^2}-\frac{d^2\,i^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}+\frac{B\,d^2\,i^2\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}$$

Result (type 4, 354 leaves, 18 steps):

$$-\frac{B (b c-a d)^2 i^2 n}{4 b^3 g^3 (a+b x)^2}-\frac{3 B d (b c-a d) i^2 n}{2 b^3 g^3 (a+b x)}-\frac{3 B d^2 i^2 n \text{Log}[a+b x]}{2 b^3 g^3}-\frac{B d^2 i^2 n \text{Log}[a+b x]^2}{2 b^3 g^3}-\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^3 g^3 (a+b x)^2}-\frac{2 d (b c-a d) i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^3 (a+b x)}+\frac{d^2 i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^3}+\frac{3 B d^2 i^2 n \text{Log}[c+d x]}{2 b^3 g^3}+\frac{B d^2 i^2 n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^3}+\frac{B d^2 i^2 n \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g^3}$$

Problem 124: Result valid but suboptimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(a g+b g x)^4} \, dx$$

Optimal (type 3, 93 leaves, 2 steps):

$$-\frac{B i^2 n (c+d x)^3}{9 (b c-a d) g^4 (a+b x)^3}-\frac{i^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 (b c-a d) g^4 (a+b x)^3}$$

Result (type 3, 301 leaves, 14 steps):

$$-\frac{B (b c-a d)^2 i^2 n}{9 b^3 g^4 (a+b x)^3}-\frac{B d (b c-a d) i^2 n}{3 b^3 g^4 (a+b x)^2}-\frac{B d^2 i^2 n}{3 b^3 g^4 (a+b x)}-\frac{B d^3 i^2 n \text{Log}[a+b x]}{3 b^3 (b c-a d) g^4}-\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^3 g^4 (a+b x)^3}-\frac{d (b c-a d) i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^4 (a+b x)^2}-\frac{d^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^4 (a+b x)}+\frac{B d^3 i^2 n \text{Log}[c+d x]}{3 b^3 (b c-a d) g^4}$$

Problem 125: Result valid but suboptimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(a g+b g x)^5} \, dx$$

Optimal (type 3, 189 leaves, 5 steps):

$$\frac{B d i^2 n (c+d x)^3}{9 (b c-a d)^2 g^5 (a+b x)^3}-\frac{b B i^2 n (c+d x)^4}{16 (b c-a d)^2 g^5 (a+b x)^4}+\frac{d i^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 (b c-a d)^2 g^5 (a+b x)^3}-\frac{b i^2 (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 (b c-a d)^2 g^5 (a+b x)^4}$$

Result (type 3, 340 leaves, 14 steps):

$$-\frac{B\,(b\,c-a\,d)^2\,i^2\,n}{16\,b^3\,g^5\,(a+b\,x)^4}-\frac{5\,B\,d\,(b\,c-a\,d)\,i^2\,n}{36\,b^3\,g^5\,(a+b\,x)^3}-\frac{B\,d^2\,i^2\,n}{24\,b^3\,g^5\,(a+b\,x)^2}+\frac{B\,d^3\,i^2\,n}{12\,b^3\,(b\,c-a\,d)\,g^5\,(a+b\,x)}+\frac{B\,d^4\,i^2\,n\,\mathrm{Log}[a+b\,x]}{12\,b^3\,(b\,c-a\,d)^2\,g^5}-\frac{(b\,c-a\,d)^2\,i^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,b^3\,g^5\,(a+b\,x)^4}-\frac{2\,d\,(b\,c-a\,d)\,i^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b^3\,g^5\,(a+b\,x)^3}-\frac{d^2\,i^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^3\,g^5\,(a+b\,x)^2}-\frac{B\,d^4\,i^2\,n\,\mathrm{Log}[c+d\,x]}{12\,b^3\,(b\,c-a\,d)^2\,g^5}$$

Problem 126: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^6}\,dx$$

Optimal (type 3, 293 leaves, 5 steps):

$$-\frac{B\,d^2\,i^2\,n\,(c+d\,x)^3}{9\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^3}+\frac{b\,B\,d\,i^2\,n\,(c+d\,x)^4}{8\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^4}-\frac{b^2\,B\,i^2\,n\,(c+d\,x)^5}{25\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^5}-\frac{d^2\,i^2\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^3}+\frac{b\,d\,i^2\,(c+d\,x)^4\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^4}-\frac{b^2\,i^2\,(c+d\,x)^5\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^5}$$

Result (type 3, 375 leaves, 14 steps):

$$-\frac{B\,(b\,c-a\,d)^2\,i^2\,n}{25\,b^3\,g^6\,(a+b\,x)^5}-\frac{3\,B\,d\,(b\,c-a\,d)\,i^2\,n}{40\,b^3\,g^6\,(a+b\,x)^4}-\frac{B\,d^2\,i^2\,n}{90\,b^3\,g^6\,(a+b\,x)^3}+\frac{B\,d^3\,i^2\,n}{60\,b^3\,(b\,c-a\,d)\,g^6\,(a+b\,x)^2}-\frac{B\,d^4\,i^2\,n}{30\,b^3\,(b\,c-a\,d)^2\,g^6\,(a+b\,x)}-\frac{B\,d^5\,i^2\,n\,\mathrm{Log}[a+b\,x]}{30\,b^3\,(b\,c-a\,d)^3\,g^6}-\frac{(b\,c-a\,d)^2\,i^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,b^3\,g^6\,(a+b\,x)^5}-\frac{d\,(b\,c-a\,d)\,i^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^3\,g^6\,(a+b\,x)^4}-\frac{d^2\,i^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b^3\,g^6\,(a+b\,x)^3}+\frac{B\,d^5\,i^2\,n\,\mathrm{Log}[c+d\,x]}{30\,b^3\,(b\,c-a\,d)^3\,g^6}$$

Problem 127: Result valid but suboptimal antiderivative.

$$\int(a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,dx$$

Optimal (type 3, 477 leaves, 5 steps):

$$\frac{B\,(b\,c-a\,d)^6\,g^3\,i^3\,n\,x}{140\,b^3\,d^3}+\frac{B\,(b\,c-a\,d)^5\,g^3\,i^3\,n\,(c+d\,x)^2}{280\,b^2\,d^4}+\frac{B\,(b\,c-a\,d)^4\,g^3\,i^3\,n\,(c+d\,x)^3}{420\,b\,d^4}-\frac{17\,B\,(b\,c-a\,d)^3\,g^3\,i^3\,n\,(c+d\,x)^4}{280\,d^4}+\frac{b\,B\,(b\,c-a\,d)^2\,g^3\,i^3\,n\,(c+d\,x)^5}{14\,d^4}-\frac{b^2\,B\,(b\,c-a\,d)\,g^3\,i^3\,n\,(c+d\,x)^6}{42\,d^4}-\frac{(b\,c-a\,d)^3\,g^3\,i^3\,(c+d\,x)^4\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,d^4}+\frac{3\,b\,(b\,c-a\,d)^2\,g^3\,i^3\,(c+d\,x)^5\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,d^4}-\frac{b^2\,(b\,c-a\,d)\,g^3\,i^3\,(c+d\,x)^6\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,d^4}+\frac{b^3\,g^3\,i^3\,(c+d\,x)^7\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{7\,d^4}+\frac{B\,(b\,c-a\,d)^7\,g^3\,i^3\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{140\,b^4\,d^4}+\frac{B\,(b\,c-a\,d)^7\,g^3\,i^3\,n\,\mathrm{Log}[c+d\,x]}{140\,b^4\,d^4}$$

Result (type 3, 435 leaves, 18 steps):

$$-\frac{B\,(b\,c-a\,d)^6\,g^3\,i^3\,n\,x}{140\,b^3\,d^3}+\frac{B\,(b\,c-a\,d)^5\,g^3\,i^3\,n\,(a+b\,x)^2}{280\,b^4\,d^2}-\frac{B\,(b\,c-a\,d)^4\,g^3\,i^3\,n\,(a+b\,x)^3}{420\,b^4\,d}-\frac{17\,B\,(b\,c-a\,d)^3\,g^3\,i^3\,n\,(a+b\,x)^4}{280\,b^4}-\frac{B\,d\,(b\,c-a\,d)^2\,g^3\,i^3\,n\,(a+b\,x)^5}{14\,b^4}-\frac{B\,d^2\,(b\,c-a\,d)\,g^3\,i^3\,n\,(a+b\,x)^6}{42\,b^4}+\frac{(b\,c-a\,d)^3\,g^3\,i^3\,(a+b\,x)^4\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,b^4}+\frac{3\,d\,(b\,c-a\,d)^2\,g^3\,i^3\,(a+b\,x)^5\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,b^4}+\frac{d^2\,(b\,c-a\,d)\,g^3\,i^3\,(a+b\,x)^6\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^4}+\frac{d^3\,g^3\,i^3\,(a+b\,x)^7\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{7\,b^4}+\frac{B\,(b\,c-a\,d)^7\,g^3\,i^3\,n\,\mathrm{Log}[c+d\,x]}{140\,b^4\,d^4}$$

Problem 128: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,dx$$

Optimal (type 3, 387 leaves, 5 steps):

$$-\frac{B (b c-a d)^5 g^2 i^3 n x}{60 b^3 d^2}-\frac{B (b c-a d)^4 g^2 i^3 n (c+d x)^2}{120 b^2 d^3}-\frac{B (b c-a d)^3 g^2 i^3 n (c+d x)^3}{180 b d^3}+\frac{7 B (b c-a d)^2 g^2 i^3 n (c+d x)^4}{120 d^3}-\frac{b B (b c-a d) g^2 i^3 n (c+d x)^5}{30 d^3}+\frac{(b c-a d)^2 g^2 i^3 (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 d^3}-\frac{2 b (b c-a d) g^2 i^3 (c+d x)^5 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{5 d^3}+\frac{b^2 g^2 i^3 (c+d x)^6 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 d^3}-\frac{B (b c-a d)^6 g^2 i^3 n \text{Log}\left[\frac{a+b x}{c+d x}\right]}{60 b^4 d^3}-\frac{B (b c-a d)^6 g^2 i^3 n \text{Log}[c+d x]}{60 b^4 d^3}$$

Result (type 3, 345 leaves, 14 steps) :

$$-\frac{B (b c-a d)^5 g^2 i^3 n x}{60 b^3 d^2}-\frac{B (b c-a d)^4 g^2 i^3 n (c+d x)^2}{120 b^2 d^3}-\frac{B (b c-a d)^3 g^2 i^3 n (c+d x)^3}{180 b d^3}+\frac{7 B (b c-a d)^2 g^2 i^3 n (c+d x)^4}{120 d^3}-\frac{b B (b c-a d) g^2 i^3 n (c+d x)^5}{30 d^3}-\frac{B (b c-a d)^6 g^2 i^3 n \text{Log}[a+b x]}{60 b^4 d^3}+\frac{(b c-a d)^2 g^2 i^3 (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 d^3}-\frac{2 b (b c-a d) g^2 i^3 (c+d x)^5 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{5 d^3}+\frac{b^2 g^2 i^3 (c+d x)^6 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 d^3}$$

Problem 129: Result valid but suboptimal antiderivative.

$$\int (a g+b g x) (c i+d i x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \, dx$$

Optimal (type 3, 283 leaves, 5 steps) :

$$\frac{B (b c-a d)^4 g i^3 n x}{20 b^3 d}+\frac{B (b c-a d)^3 g i^3 n (c+d x)^2}{40 b^2 d^2}+\frac{B (b c-a d)^2 g i^3 n (c+d x)^3}{60 b d^2}-\frac{B (b c-a d) g i^3 n (c+d x)^4}{20 d^2}-\frac{(b c-a d) g i^3 (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 d^2}+\frac{b g i^3 (c+d x)^5 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{5 d^2}+\frac{B (b c-a d)^5 g i^3 n \text{Log}\left[\frac{a+b x}{c+d x}\right]}{20 b^4 d^2}+\frac{B (b c-a d)^5 g i^3 n \text{Log}[c+d x]}{20 b^4 d^2}$$

Result (type 3, 243 leaves, 10 steps) :

$$\frac{B\,(b\,c-a\,d)^4\,g\,i^3\,n\,x}{20\,b^3\,d}+\frac{B\,(b\,c-a\,d)^3\,g\,i^3\,n\,(c+d\,x)^2}{40\,b^2\,d^2}+\frac{B\,(b\,c-a\,d)^2\,g\,i^3\,n\,(c+d\,x)^3}{60\,b\,d^2}-\frac{B\,(b\,c-a\,d)\,g\,i^3\,n\,(c+d\,x)^4}{20\,d^2}+\frac{B\,(b\,c-a\,d)^5\,g\,i^3\,n\,\text{Log}[a+b\,x]}{20\,b^4\,d^2}-\frac{(b\,c-a\,d)\,g\,i^3\,(c+d\,x)^4\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,d^2}+\frac{b\,g\,i^3\,(c+d\,x)^5\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,d^2}$$

Problem 131: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 373 leaves, 14 steps):

$$-\frac{5\,B\,d\,(b\,c-a\,d)^2\,i^3\,n\,x}{6\,b^3\,g}-\frac{B\,(b\,c-a\,d)\,i^3\,n\,(c+d\,x)^2}{6\,b^2\,g}+\frac{d\,(b\,c-a\,d)^2\,i^3\,(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^4\,g}+\frac{(b\,c-a\,d)\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^2\,g}+\frac{i^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,g}-\frac{5\,B\,(b\,c-a\,d)^3\,i^3\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{6\,b^4\,g}-\frac{11\,B\,(b\,c-a\,d)^3\,i^3\,n\,\text{Log}[c+d\,x]}{6\,b^4\,g}-\frac{(b\,c-a\,d)^3\,i^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g}+\frac{B\,(b\,c-a\,d)^3\,i^3\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g}$$

Result (type 4, 455 leaves, 22 steps):

$$\frac{A\,d\,(b\,c-a\,d)^2\,i^3\,x}{b^3\,g}-\frac{5\,B\,d\,(b\,c-a\,d)^2\,i^3\,n\,x}{6\,b^3\,g}-\frac{B\,(b\,c-a\,d)\,i^3\,n\,(c+d\,x)^2}{6\,b^2\,g}-\frac{5\,B\,(b\,c-a\,d)^3\,i^3\,n\,\text{Log}[a+b\,x]}{6\,b^4\,g}-\frac{B\,(b\,c-a\,d)^3\,i^3\,n\,\text{Log}[g\,(a+b\,x)]^2}{2\,b^4\,g}+\frac{B\,d\,(b\,c-a\,d)^2\,i^3\,(a+b\,x)\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b^4\,g}+\frac{(b\,c-a\,d)\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^2\,g}+\frac{i^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,g}-\frac{B\,(b\,c-a\,d)^3\,i^3\,n\,\text{Log}[c+d\,x]}{b^4\,g}+\frac{(b\,c-a\,d)^3\,i^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[a\,g+b\,g\,x]}{b^4\,g}+\frac{B\,(b\,c-a\,d)^3\,i^3\,n\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]}{b^4\,g}+\frac{B\,(b\,c-a\,d)^3\,i^3\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g}$$

Problem 132: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3 \left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 4, 390 leaves, 11 steps):

$$-\frac{B\,d^2\,(b\,c-a\,d)\,i^3\,n\,x}{2\,b^3\,g^2}-\frac{B\,(b\,c-a\,d)^2\,i^3\,n\,(c+d\,x)}{b^3\,g^2\,(a+b\,x)}+\frac{2\,d^2\,(b\,c-a\,d)\,i^3\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^4\,g^2}-\frac{(b\,c-a\,d)^2\,i^3\,(c+d\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^3\,g^2\,(a+b\,x)}+\frac{d\,i^3\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^2\,g^2}-\frac{B\,d\,(b\,c-a\,d)^2\,i^3\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{2\,b^4\,g^2}-\frac{5\,B\,d\,(b\,c-a\,d)^2\,i^3\,n\,\mathrm{Log}[c+d\,x]}{2\,b^4\,g^2}-\frac{3\,d\,(b\,c-a\,d)^2\,i^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^2}+\frac{3\,B\,d\,(b\,c-a\,d)^2\,i^3\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^2}$$

Result (type 4, 543 leaves, 21 steps):

$$\frac{A\,d^2\,(3\,b\,c-2\,a\,d)\,i^3\,x}{b^3\,g^2}-\frac{B\,d^2\,(b\,c-a\,d)\,i^3\,n\,x}{2\,b^3\,g^2}-\frac{B\,(b\,c-a\,d)^3\,i^3\,n}{b^4\,g^2\,(a+b\,x)}-\frac{a^2\,B\,d^3\,i^3\,n\,\mathrm{Log}[a+b\,x]}{2\,b^4\,g^2}-\frac{B\,d\,(b\,c-a\,d)^2\,i^3\,n\,\mathrm{Log}[a+b\,x]}{b^4\,g^2}-\frac{3\,B\,d\,(b\,c-a\,d)^2\,i^3\,n\,\mathrm{Log}[a+b\,x]^2}{2\,b^4\,g^2}+\frac{B\,d^2\,(3\,b\,c-2\,a\,d)\,i^3\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b^4\,g^2}+\frac{d^3\,i^3\,x^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^2\,g^2}-\frac{(b\,c-a\,d)^3\,i^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^4\,g^2\,(a+b\,x)}+\frac{3\,d\,(b\,c-a\,d)^2\,i^3\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^4\,g^2}+\frac{B\,c^2\,d\,i^3\,n\,\mathrm{Log}[c+d\,x]}{2\,b^2\,g^2}-\frac{B\,d\,(3\,b\,c-2\,a\,d)\,(b\,c-a\,d)\,i^3\,n\,\mathrm{Log}[c+d\,x]}{b^4\,g^2}+\frac{B\,d\,(b\,c-a\,d)^2\,i^3\,n\,\mathrm{Log}[c+d\,x]}{b^4\,g^2}+\frac{3\,B\,d\,(b\,c-a\,d)^2\,i^3\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^2}+\frac{3\,B\,d\,(b\,c-a\,d)^2\,i^3\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^2}$$

Problem 133: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3 \left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 4, 361 leaves, 9 steps):

$$-\frac{2\,B\,d\,(b\,c-a\,d)\,i^3\,n\,(c+d\,x)}{b^3\,g^3\,(a+b\,x)}-\frac{B\,(b\,c-a\,d)\,i^3\,n\,(c+d\,x)^2}{4\,b^2\,g^3\,(a+b\,x)^2}+\frac{d^3\,i^3\,(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^4\,g^3}-\frac{2\,d\,(b\,c-a\,d)\,i^3\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^3\,g^3\,(a+b\,x)}-\frac{(b\,c-a\,d)\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^2\,g^3\,(a+b\,x)^2}-\frac{B\,d^2\,(b\,c-a\,d)\,i^3\,n\,\text{Log}[c+d\,x]}{b^4\,g^3}-\frac{3\,d^2\,(b\,c-a\,d)\,i^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^3}+\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3\,n\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^3}$$

Result (type 4, 461 leaves, 21 steps):

$$\frac{A\,d^3\,i^3\,x}{b^3\,g^3}-\frac{B\,(b\,c-a\,d)^3\,i^3\,n}{4\,b^4\,g^3\,(a+b\,x)^2}-\frac{5\,B\,d\,(b\,c-a\,d)^2\,i^3\,n}{2\,b^4\,g^3\,(a+b\,x)}-\frac{5\,B\,d^2\,(b\,c-a\,d)\,i^3\,n\,\text{Log}[a+b\,x]}{2\,b^4\,g^3}-\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3\,n\,\text{Log}[a+b\,x]^2}{2\,b^4\,g^3}+\frac{B\,d^3\,i^3\,(a+b\,x)\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b^4\,g^3}-\frac{(b\,c-a\,d)^3\,i^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^4\,g^3\,(a+b\,x)^2}-\frac{3\,d\,(b\,c-a\,d)^2\,i^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^4\,g^3\,(a+b\,x)}+\frac{3\,d^2\,(b\,c-a\,d)\,i^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^4\,g^3}+\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3\,n\,\text{Log}[c+d\,x]}{2\,b^4\,g^3}+\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^3}+\frac{3\,B\,d^2\,(b\,c-a\,d)\,i^3\,n\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^3}$$

Problem 134: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 4, 326 leaves, 9 steps):

$$-\frac{B\,d^2\,i^3\,n\,(c+d\,x)}{b^3\,g^4\,(a+b\,x)}-\frac{B\,d\,i^3\,n\,(c+d\,x)^2}{4\,b^2\,g^4\,(a+b\,x)^2}-\frac{B\,i^3\,n\,(c+d\,x)^3}{9\,b\,g^4\,(a+b\,x)^3}-\frac{d^2\,i^3\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^3\,g^4\,(a+b\,x)}-\frac{d\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^2\,g^4\,(a+b\,x)^2}-\frac{i^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,g^4\,(a+b\,x)^3}-\frac{d^3\,i^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^4}+\frac{B\,d^3\,i^3\,n\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^4}$$

Result (type 4, 444 leaves, 22 steps):

$$-\frac{B\,(b\,c-a\,d)^3\,i^3\,n}{9\,b^4\,g^4\,(a+b\,x)^3}-\frac{7\,B\,d\,(b\,c-a\,d)^2\,i^3\,n}{12\,b^4\,g^4\,(a+b\,x)^2}-\frac{11\,B\,d^2\,(b\,c-a\,d)\,i^3\,n}{6\,b^4\,g^4\,(a+b\,x)}-$$
$$\frac{11\,B\,d^3\,i^3\,n\,\text{Log}[a+b\,x]}{6\,b^4\,g^4}-\frac{B\,d^3\,i^3\,n\,\text{Log}[a+b\,x]^2}{2\,b^4\,g^4}-\frac{(b\,c-a\,d)^3\,i^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b^4\,g^4\,(a+b\,x)^3}-$$
$$\frac{3\,d\,(b\,c-a\,d)^2\,i^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^4\,g^4\,(a+b\,x)^2}-\frac{3\,d^2\,(b\,c-a\,d)\,i^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^4\,g^4\,(a+b\,x)}+$$
$$\frac{d^3\,i^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^4\,g^4}+\frac{11\,B\,d^3\,i^3\,n\,\text{Log}[c+d\,x]}{6\,b^4\,g^4}+$$
$$\frac{B\,d^3\,i^3\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^4}+\frac{B\,d^3\,i^3\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^4}$$

Problem 135: Result valid but suboptimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{c\,i+d\,i\,x}\,dx$$

Optimal (type 4, 269 leaves, 6 steps):

$$\frac{g^3\,(a+b\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,d\,i}-\frac{(b\,c-a\,d)\,g^3\,(a+b\,x)^2\,\left(3\,A+B\,n+3\,B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,d^2\,i}+$$
$$\frac{(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\left(6\,A+5\,B\,n+6\,B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,d^3\,i}+$$
$$\frac{(b\,c-a\,d)^3\,g^3\,\left(6\,A+11\,B\,n+6\,B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{6\,d^4\,i}+$$
$$\frac{B\,(b\,c-a\,d)^3\,g^3\,n\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i}$$

Result (type 4, 426 leaves, 22 steps):

$$\frac{A\,b\,(b\,c-a\,d)^2\,g^3\,x}{d^3\,i}+\frac{5\,b\,B\,(b\,c-a\,d)^2\,g^3\,n\,x}{6\,d^3\,i}-\frac{B\,(b\,c-a\,d)\,g^3\,n\,(a+b\,x)^2}{6\,d^2\,i}+$$
$$\frac{B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d^3\,i}-\frac{(b\,c-a\,d)\,g^3\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,d^2\,i}+$$
$$\frac{g^3\,(a+b\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,d\,i}-\frac{11\,B\,(b\,c-a\,d)^3\,g^3\,n\,\text{Log}[c+d\,x]}{6\,d^4\,i}-$$
$$\frac{B\,(b\,c-a\,d)^3\,g^3\,n\,\text{Log}[i\,(c+d\,x)]^2}{2\,d^4\,i}+\frac{B\,(b\,c-a\,d)^3\,g^3\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c\,i+d\,i\,x]}{d^4\,i}-$$
$$\frac{(b\,c-a\,d)^3\,g^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c\,i+d\,i\,x]}{d^4\,i}+\frac{B\,(b\,c-a\,d)^3\,g^3\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i}$$

Problem 136: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{c i+d i x} \, dx$$

Optimal (type 4, 211 leaves, 5 steps):

$$\frac{g^2 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d i}-\frac{(b c-a d) g^2 (a+b x) \left(2 A+B n+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^2 i}-\frac{(b c-a d)^2 g^2 \left(2 A+3 B n+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{2 d^3 i}-\frac{B (b c-a d)^2 g^2 n \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i}$$

Result (type 4, 343 leaves, 18 steps):

$$-\frac{A b (b c-a d) g^2 x}{d^2 i}-\frac{b B (b c-a d) g^2 n x}{2 d^2 i}-\frac{B (b c-a d) g^2 (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^2 i}+\frac{g^2 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d i}+\frac{3 B (b c-a d)^2 g^2 n \text{Log}[c+d x]}{2 d^3 i}+\frac{B (b c-a d)^2 g^2 n \text{Log}[i (c+d x)]^2}{2 d^3 i}-\frac{B (b c-a d)^2 g^2 n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c i+d i x]}{d^3 i}+\frac{(b c-a d)^2 g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c i+d i x]}{d^3 i}-\frac{B (b c-a d)^2 g^2 n \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i}$$

Problem 137: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{c i+d i x} \, dx$$

Optimal (type 4, 134 leaves, 4 steps):

$$\frac{g (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d i}+\frac{(b c-a d) g \left(A+B n+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^2 i}+\frac{B (b c-a d) g n \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i}$$

Result (type 4, 223 leaves, 13 steps):

$$\frac{A\,b\,g\,x}{d\,i}+\frac{B\,g\,(a+b\,x)\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d\,i}-\frac{B\,(b\,c-a\,d)\,g\,n\,\text{Log}[c+d\,x]}{d^2\,i}+\frac{B\,(b\,c-a\,d)\,g\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{d^2\,i}-\frac{(b\,c-a\,d)\,g\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{d^2\,i}-\frac{B\,(b\,c-a\,d)\,g\,n\,\text{Log}[c+d\,x]^2}{2\,d^2\,i}+\frac{B\,(b\,c-a\,d)\,g\,n\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2\,i}$$

Problem 138: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{c\,i+d\,i\,x}\,dx$$

Optimal (type 4, 80 leaves, 5 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{d\,i}-\frac{B\,n\,\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d\,i}$$

Result (type 4, 128 leaves, 9 steps):

$$\frac{B\,n\,\text{Log}[i\,(c+d\,x)]^2}{2\,d\,i}-\frac{B\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c\,i+d\,i\,x]}{d\,i}+\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c\,i+d\,i\,x]}{d\,i}-\frac{B\,n\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,i}$$

Problem 139: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(a\,g+b\,g\,x)\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 50 leaves, 2 steps):

$$\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,B\,(b\,c-a\,d)\,g\,i\,n}$$

Result (type 4, 316 leaves, 18 steps):

$$-\frac{B\,n\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)\,g\,i}+\frac{\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)\,g\,i}+\frac{B\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)\,g\,i}-\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{(b\,c-a\,d)\,g\,i}-\frac{B\,n\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)\,g\,i}+\frac{B\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}+\frac{B\,n\,\text{PolyLog}\left[2,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}+\frac{B\,n\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}$$

Problem 140: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 181 leaves, 5 steps):

$$-\frac{b\,B\,n\,(c+d\,x)}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{b\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{d\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B\,d\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{2\,(b\,c-a\,d)^2\,g^2\,i}$$

Result (type 4, 455 leaves, 22 steps):

$$-\frac{B\,n}{(b\,c-a\,d)\,g^2\,i\,(a+b\,x)}-\frac{B\,d\,n\,\text{Log}[a+b\,x]}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B\,d\,n\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^2\,g^2\,i}-\frac{A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)\,g^2\,i\,(a+b\,x)}-\frac{d\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B\,d\,n\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}-\frac{B\,d\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}+\frac{d\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B\,d\,n\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^2\,g^2\,i}-\frac{B\,d\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g^2\,i}-\frac{B\,d\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g^2\,i}-\frac{B\,d\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g^2\,i}$$

Problem 141: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 266 leaves, 7 steps):

$$-\frac{B\,n\,(c+d\,x)^2\left(b-\frac{4\,d\,(a+b\,x)}{c+d\,x}\right)^2}{4\,(b\,c-a\,d)^3\,g^3\,i\,(a+b\,x)^2}+\frac{2\,b\,d\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^3\,g^3\,i\,(a+b\,x)}-\frac{b^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)^3\,g^3\,i\,(a+b\,x)^2}+\frac{d^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{(b\,c-a\,d)^3\,g^3\,i}-\frac{B\,d^2\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{2\,(b\,c-a\,d)^3\,g^3\,i}$$

Result (type 4, 557 leaves, 26 steps):

$$-\frac{B n}{4 (b c-a d) g^3 i (a+b x)^2}+\frac{3 B d n}{2 (b c-a d)^2 g^3 i (a+b x)}+\frac{3 B d^2 n \operatorname{Log}[a+b x]}{2 (b c-a d)^3 g^3 i}-\frac{B d^2 n \operatorname{Log}[a+b x]^2}{2 (b c-a d)^3 g^3 i}-\frac{A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{2 (b c-a d) g^3 i (a+b x)^2}+\frac{d \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^2 g^3 i (a+b x)}+\frac{d^2 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^3 i}-\frac{3 B d^2 n \operatorname{Log}[c+d x]}{2 (b c-a d)^3 g^3 i}+\frac{B d^2 n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d)^3 g^3 i}-\frac{d^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{(b c-a d)^3 g^3 i}-\frac{B d^2 n \operatorname{Log}[c+d x]^2}{2 (b c-a d)^3 g^3 i}+\frac{B d^2 n \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}+\frac{B d^2 n \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}+\frac{B d^2 n \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}$$

Problem 142: Result unnecessarily involves higher level functions.

$$\int \frac{A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(a g+b g x)^4 (c i+d i x)} \, dx$$

Optimal (type 3, 389 leaves, 8 steps):

$$-\frac{3 b B d^2 n (c+d x)}{(b c-a d)^4 g^4 i (a+b x)}+\frac{3 b^2 B d n (c+d x)^2}{4 (b c-a d)^4 g^4 i (a+b x)^2}-\frac{b^3 B n (c+d x)^3}{9 (b c-a d)^4 g^4 i (a+b x)^3}-\frac{3 b d^2 (c+d x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^4 i (a+b x)}+\frac{3 b^2 d (c+d x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^4 g^4 i (a+b x)^2}-\frac{b^3 (c+d x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 (b c-a d)^4 g^4 i (a+b x)^3}-\frac{d^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{(b c-a d)^4 g^4 i}+\frac{B d^3 n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2}{2 (b c-a d)^4 g^4 i}$$

Result (type 4, 646 leaves, 30 steps):

$$-\frac{B\,n}{9\,(b\,c-a\,d)\,g^4\,i\,(a+b\,x)^3}+\frac{5\,B\,d\,n}{12\,(b\,c-a\,d)^2\,g^4\,i\,(a+b\,x)^2}-\frac{11\,B\,d^2\,n}{6\,(b\,c-a\,d)^3\,g^4\,i\,(a+b\,x)}-\frac{11\,B\,d^3\,n\,\mathrm{Log}[a+b\,x]}{6\,(b\,c-a\,d)^4\,g^4\,i}+\frac{B\,d^3\,n\,\mathrm{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4\,g^4\,i}-\frac{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{3\,(b\,c-a\,d)\,g^4\,i\,(a+b\,x)^3}+\frac{d\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)^2\,g^4\,i\,(a+b\,x)^2}-\frac{d^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^3\,g^4\,i\,(a+b\,x)}-\frac{d^3\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^4\,g^4\,i}+\frac{11\,B\,d^3\,n\,\mathrm{Log}[c+d\,x]}{6\,(b\,c-a\,d)^4\,g^4\,i}-\frac{B\,d^3\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^4\,i}+\frac{d^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^4\,i}+\frac{B\,d^3\,n\,\mathrm{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^4\,g^4\,i}-\frac{B\,d^3\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{B\,d^3\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{B\,d^3\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}$$

Problem 143: Result valid but suboptimal antiderivative.

$$\int \frac{(a\,g+b\,g\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 4, 359 leaves, 9 steps):

$$\frac{3\,B\,(b\,c-a\,d)^2\,g^3\,n\,(a+b\,x)}{d^3\,i^2\,(c+d\,x)}-\frac{(b\,c-a\,d)^2\,g^3\,(6\,A+5\,B\,n)\,(a+b\,x)}{2\,d^3\,i^2\,(c+d\,x)}-\frac{3\,B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d^3\,i^2\,(c+d\,x)}+\frac{g^3\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,d\,i^2\,(c+d\,x)}-\frac{(b\,c-a\,d)\,g^3\,(a+b\,x)^2\,\left(3\,A+B\,n+3\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,d^2\,i^2\,(c+d\,x)}-\frac{b\,(b\,c-a\,d)^2\,g^3\,\left(6\,A+5\,B\,n+6\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{2\,d^4\,i^2}-\frac{3\,b\,B\,(b\,c-a\,d)^2\,g^3\,n\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i^2}$$

Result (type 4, 541 leaves, 21 steps):

$$-\frac{A\,b^2\,(2\,b\,c-3\,a\,d)\,g^3\,x}{d^3\,i^2}-\frac{b^2\,B\,(b\,c-a\,d)\,g^3\,n\,x}{2\,d^3\,i^2}-\frac{B\,(b\,c-a\,d)^3\,g^3\,n}{d^4\,i^2\,(c+d\,x)}-\frac{a^2\,b\,B\,g^3\,n\,\mathrm{Log}[a+b\,x]}{2\,d^2\,i^2}-$$
$$\frac{b\,B\,(b\,c-a\,d)^2\,g^3\,n\,\mathrm{Log}[a+b\,x]}{d^4\,i^2}-\frac{b\,B\,(2\,b\,c-3\,a\,d)\,g^3\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d^3\,i^2}+$$
$$\frac{b^3\,g^3\,x^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,d^2\,i^2}+\frac{(b\,c-a\,d)^3\,g^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{d^4\,i^2\,(c+d\,x)}+$$
$$\frac{b^3\,B\,c^2\,g^3\,n\,\mathrm{Log}[c+d\,x]}{2\,d^4\,i^2}+\frac{b\,B\,(2\,b\,c-3\,a\,d)\,(b\,c-a\,d)\,g^3\,n\,\mathrm{Log}[c+d\,x]}{d^4\,i^2}+$$
$$\frac{b\,B\,(b\,c-a\,d)^2\,g^3\,n\,\mathrm{Log}[c+d\,x]}{d^4\,i^2}-\frac{3\,b\,B\,(b\,c-a\,d)^2\,g^3\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{d^4\,i^2}+$$
$$\frac{3\,b\,(b\,c-a\,d)^2\,g^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[c+d\,x]}{d^4\,i^2}+$$
$$\frac{3\,b\,B\,(b\,c-a\,d)^2\,g^3\,n\,\mathrm{Log}[c+d\,x]^2}{2\,d^4\,i^2}-\frac{3\,b\,B\,(b\,c-a\,d)^2\,g^3\,n\,\mathrm{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^2}$$

Problem 144: Result valid but suboptimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 4, 275 leaves, 8 steps):

$$-\frac{2\,B\,(b\,c-a\,d)\,g^2\,n\,(a+b\,x)}{d^2\,i^2\,(c+d\,x)}+\frac{(b\,c-a\,d)\,g^2\,(2\,A+B\,n)\,(a+b\,x)}{d^2\,i^2\,(c+d\,x)}+$$
$$\frac{2\,B\,(b\,c-a\,d)\,g^2\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d^2\,i^2\,(c+d\,x)}+\frac{g^2\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{d\,i^2\,(c+d\,x)}+$$
$$\frac{b\,(b\,c-a\,d)\,g^2\,\left(2\,A+B\,n+2\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{d^3\,i^2}+$$
$$\frac{2\,b\,B\,(b\,c-a\,d)\,g^2\,n\,\mathrm{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^3\,i^2}$$

Result (type 4, 351 leaves, 17 steps):

$$\frac{A b^2 g^2 x}{d^2 i^2}+\frac{B (b c-a d)^2 g^2 n}{d^3 i^2 (c+d x)}+\frac{b B (b c-a d) g^2 n \text{Log}[a+b x]}{d^3 i^2}+$$
$$\frac{b B g^2 (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^2 i^2}-\frac{(b c-a d)^2 g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^3 i^2 (c+d x)}-$$
$$\frac{2 b B (b c-a d) g^2 n \text{Log}[c+d x]}{d^3 i^2}+\frac{2 b B (b c-a d) g^2 n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^3 i^2}-$$
$$\frac{2 b (b c-a d) g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{d^3 i^2}-$$
$$\frac{b B (b c-a d) g^2 n \text{Log}[c+d x]^2}{d^3 i^2}+\frac{2 b B (b c-a d) g^2 n \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^3 i^2}$$

Problem 145: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(c i+d i x)^2} \, dx$$

Optimal (type 4, 168 leaves, 7 steps):

$$-\frac{A g (a+b x)}{d i^2 (c+d x)}+\frac{B g n (a+b x)}{d i^2 (c+d x)}-\frac{B g (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d i^2 (c+d x)}-$$
$$\frac{b g \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^2 i^2}-\frac{b B g n \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i^2}$$

Result (type 4, 234 leaves, 14 steps):

$$-\frac{B (b c-a d) g n}{d^2 i^2 (c+d x)}-\frac{b B g n \text{Log}[a+b x]}{d^2 i^2}+\frac{(b c-a d) g \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^2 i^2 (c+d x)}+$$
$$\frac{b B g n \text{Log}[c+d x]}{d^2 i^2}-\frac{b B g n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^2 i^2}+$$
$$\frac{b g \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{d^2 i^2}+\frac{b B g n \text{Log}[c+d x]^2}{2 d^2 i^2}-\frac{b B g n \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2}$$

Problem 146: Result valid but suboptimal antiderivative.

$$\int \frac{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(c i+d i x)^2} \, dx$$

Optimal (type 3, 102 leaves, 3 steps):

$$\frac{A (a+b x)}{(b c-a d) i^2 (c+d x)}-\frac{B n (a+b x)}{(b c-a d) i^2 (c+d x)}+\frac{B (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d) i^2 (c+d x)}$$

Result (type 3, 107 leaves, 4 steps):

$$\frac{B\,n}{d\,i^2\,(c+d\,x)}+\frac{b\,B\,n\,\text{Log}[a+b\,x]}{d\,(b\,c-a\,d)\,i^2}-\frac{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d\,i^2\,(c+d\,x)}-\frac{b\,B\,n\,\text{Log}[c+d\,x]}{d\,(b\,c-a\,d)\,i^2}$$

Problem 147: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(a\,g+b\,g\,x)\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 166 leaves, 5 steps):

$$-\frac{A\,d\,(a+b\,x)}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}+\frac{B\,d\,n\,(a+b\,x)}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}-\frac{B\,d\,(a+b\,x)\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}+\frac{b\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,B\,(b\,c-a\,d)^2\,g\,i^2\,n}$$

Result (type 4, 450 leaves, 22 steps):

$$-\frac{B\,n}{(b\,c-a\,d)\,g\,i^2\,(c+d\,x)}-\frac{b\,B\,n\,\text{Log}[a+b\,x]}{(b\,c-a\,d)^2\,g\,i^2}-\frac{b\,B\,n\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^2\,g\,i^2}+\frac{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)\,g\,i^2\,(c+d\,x)}+\frac{b\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^2\,g\,i^2}+\frac{b\,B\,n\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g\,i^2}+\frac{b\,B\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g\,i^2}-\frac{b\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g\,i^2}-\frac{b\,B\,n\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^2\,g\,i^2}+\frac{b\,B\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}+\frac{b\,B\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}+\frac{b\,B\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}$$

Problem 148: Result unnecessarily involves higher level functions.

$$\int\frac{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 273 leaves, 4 steps):

$$-\frac{B\,d^2\,n\,(a+b\,x)}{(b\,c-a\,d)^3\,g^2\,i^2\,(c+d\,x)}-\frac{b^2\,B\,n\,(c+d\,x)}{(b\,c-a\,d)^3\,g^2\,i^2\,(a+b\,x)}+\frac{d^2\,(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^3\,g^2\,i^2\,(c+d\,x)}-\frac{b^2\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^3\,g^2\,i^2\,(a+b\,x)}-\frac{2\,b\,d\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{b\,B\,d\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{(b\,c-a\,d)^3\,g^2\,i^2}$$

Result (type 4, 482 leaves, 26 steps):

$$-\frac{b\,B\,n}{(b\,c-a\,d)^2\,g^2\,i^2\,(a+b\,x)}+\frac{B\,d\,n}{(b\,c-a\,d)^2\,g^2\,i^2\,(c+d\,x)}+\frac{b\,B\,d\,n\,\mathrm{Log}[a+b\,x]^2}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{b\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^2\,g^2\,i^2\,(a+b\,x)}-\frac{d\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^2\,g^2\,i^2\,(c+d\,x)}-\frac{2\,b\,d\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{2\,b\,B\,d\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{2\,b\,d\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{b\,B\,d\,n\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{2\,b\,B\,d\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{2\,b\,B\,d\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{2\,b\,B\,d\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}$$

Problem 149: Result unnecessarily involves higher level functions.

$$\int\frac{A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 380 leaves, 8 steps):

$$\frac{B\,d^3\,n\,(a+b\,x)}{(b\,c-a\,d)^4\,g^3\,i^2\,(c+d\,x)}+\frac{3\,b^2\,B\,d\,n\,(c+d\,x)}{(b\,c-a\,d)^4\,g^3\,i^2\,(a+b\,x)}-\frac{b^3\,B\,n\,(c+d\,x)^2}{4\,(b\,c-a\,d)^4\,g^3\,i^2\,(a+b\,x)^2}-\frac{d^3\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^4\,g^3\,i^2\,(c+d\,x)}+\frac{3\,b^2\,d\,(c+d\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^4\,g^3\,i^2\,(a+b\,x)}-\frac{b^3\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)^4\,g^3\,i^2\,(a+b\,x)^2}+\frac{3\,b\,d^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{3\,b\,B\,d^2\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{2\,(b\,c-a\,d)^4\,g^3\,i^2}$$

Result (type 4, 656 leaves, 30 steps):

$$-\frac{b\,B\,n}{4\,(b\,c-a\,d)^2\,g^3\,i^2\,(a+b\,x)^2}+\frac{5\,b\,B\,d\,n}{2\,(b\,c-a\,d)^3\,g^3\,i^2\,(a+b\,x)}-\frac{B\,d^2\,n}{(b\,c-a\,d)^3\,g^3\,i^2\,(c+d\,x)}+\frac{3\,b\,B\,d^2\,n\,\mathrm{Log}[a+b\,x]}{2\,(b\,c-a\,d)^4\,g^3\,i^2}-\frac{3\,b\,B\,d^2\,n\,\mathrm{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4\,g^3\,i^2}-\frac{b\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)^2\,g^3\,i^2\,(a+b\,x)^2}+\frac{2\,b\,d\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^3\,g^3\,i^2\,(a+b\,x)}+\frac{d^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^3\,g^3\,i^2\,(c+d\,x)}+\frac{3\,b\,d^2\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{3\,b\,B\,d^2\,n\,\mathrm{Log}[c+d\,x]}{2\,(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B\,d^2\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{3\,b\,d^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{3\,b\,B\,d^2\,n\,\mathrm{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B\,d^2\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B\,d^2\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B\,d^2\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}$$

Problem 150: Result unnecessarily involves higher level functions.

$$\int\frac{A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(a\,g+b\,g\,x)^4\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 477 leaves, 4 steps):

$$-\frac{B\,d^4\,n\,(a+b\,x)}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)}-\frac{6\,b^2\,B\,d^2\,n\,(c+d\,x)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)}+\frac{b^3\,B\,d\,n\,(c+d\,x)^2}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^2}-\frac{b^4\,B\,n\,(c+d\,x)^3}{9\,(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^3}+\frac{d^4\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)}-\frac{6\,b^2\,d^2\,(c+d\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)}+\frac{2\,b^3\,d\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^2}-\frac{b^4\,(c+d\,x)^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^3}-\frac{4\,b\,d^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{(b\,c-a\,d)^5\,g^4\,i^2}+\frac{2\,b\,B\,d^3\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{(b\,c-a\,d)^5\,g^4\,i^2}$$

Result (type 4, 735 leaves, 34 steps):

$$-\frac{b B n}{9 (b c-a d)^2 g^4 i^2 (a+b x)^3}+\frac{2 b B d n}{3 (b c-a d)^3 g^4 i^2 (a+b x)^2}-\frac{13 b B d^2 n}{3 (b c-a d)^4 g^4 i^2 (a+b x)}+\frac{B d^3 n}{(b c-a d)^4 g^4 i^2 (c+d x)}-\frac{10 b B d^3 n \operatorname{Log}[a+b x]}{3 (b c-a d)^5 g^4 i^2}+\frac{2 b B d^3 n \operatorname{Log}[a+b x]^2}{(b c-a d)^5 g^4 i^2}-\frac{b \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 (b c-a d)^2 g^4 i^2 (a+b x)^3}+\frac{b d \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^4 i^2 (a+b x)^2}-\frac{3 b d^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^4 i^2 (a+b x)}-\frac{d^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^4 i^2 (c+d x)}-\frac{4 b d^3 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^5 g^4 i^2}+\frac{10 b B d^3 n \operatorname{Log}[c+d x]}{3 (b c-a d)^5 g^4 i^2}-\frac{4 b B d^3 n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d)^5 g^4 i^2}+\frac{4 b d^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{(b c-a d)^5 g^4 i^2}+\frac{2 b B d^3 n \operatorname{Log}[c+d x]^2}{(b c-a d)^5 g^4 i^2}-\frac{4 b B d^3 n \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^5 g^4 i^2}-\frac{4 b B d^3 n \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^5 g^4 i^2}-\frac{4 b B d^3 n \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^5 g^4 i^2}$$

Problem 151: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(c i+d i x)^3} \, dx$$

Optimal (type 4, 382 leaves, 9 steps):

$$-\frac{3 B (b c-a d) g^3 n (a+b x)^2}{4 d^2 i^3 (c+d x)^2}-\frac{3 b B (b c-a d) g^3 n (a+b x)}{d^3 i^3 (c+d x)}+\frac{b (b c-a d) g^3 (3 A+B n) (a+b x)}{d^3 i^3 (c+d x)}+\frac{3 b B (b c-a d) g^3 (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^3 i^3 (c+d x)}+\frac{g^3 (a+b x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d i^3 (c+d x)^2}+\frac{(b c-a d) g^3 (a+b x)^2 \left(3 A+B n+3 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^2 i^3 (c+d x)^2}+\frac{b^2 (b c-a d) g^3 \left(3 A+B n+3 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^4 i^3}+\frac{3 b^2 B (b c-a d) g^3 n \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}$$

Result (type 4, 461 leaves, 21 steps):

$$\frac{A b^3 g^3 x}{d^3 i^3}-\frac{B (b c-a d)^3 g^3 n}{4 d^4 i^3 (c+d x)^2}+\frac{5 b B (b c-a d)^2 g^3 n}{2 d^4 i^3 (c+d x)}+\frac{5 b^2 B (b c-a d) g^3 n \operatorname{Log}[a+b x]}{2 d^4 i^3}+\frac{b^2 B g^3 (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^3 i^3}+\frac{(b c-a d)^3 g^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^4 i^3 (c+d x)^2}-\frac{3 b (b c-a d)^2 g^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^4 i^3 (c+d x)}-\frac{7 b^2 B (b c-a d) g^3 n \operatorname{Log}[c+d x]}{2 d^4 i^3}+\frac{3 b^2 B (b c-a d) g^3 n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d^4 i^3}-\frac{3 b^2 (b c-a d) g^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{d^4 i^3}-\frac{3 b^2 B (b c-a d) g^3 n \operatorname{Log}[c+d x]^2}{2 d^4 i^3}+\frac{3 b^2 B (b c-a d) g^3 n \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^4 i^3}$$

Problem 152: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(c i+d i x)^3} \, dx$$

Optimal (type 4, 263 leaves, 8 steps):

$$\frac{B g^2 n (a+b x)^2}{4 d i^3 (c+d x)^2}-\frac{A b g^2 (a+b x)}{d^2 i^3 (c+d x)}+\frac{b B g^2 n (a+b x)}{d^2 i^3 (c+d x)}-\frac{b B g^2 (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^2 i^3 (c+d x)}-\frac{g^2 (a+b x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d i^3 (c+d x)^2}-\frac{b^2 g^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^3 i^3}-\frac{b^2 B g^2 n \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^3}$$

Result (type 4, 356 leaves, 18 steps):

$$\frac{B (b c-a d)^2 g^2 n}{4 d^3 i^3 (c+d x)^2}-\frac{3 b B (b c-a d) g^2 n}{2 d^3 i^3 (c+d x)}-\frac{3 b^2 B g^2 n \operatorname{Log}[a+b x]}{2 d^3 i^3}-\frac{(b c-a d)^2 g^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^3 i^3 (c+d x)^2}+\frac{2 b (b c-a d) g^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^3 i^3 (c+d x)}+\frac{3 b^2 B g^2 n \operatorname{Log}[c+d x]}{2 d^3 i^3}-\frac{b^2 B g^2 n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d^3 i^3}+\frac{b^2 g^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{d^3 i^3}+\frac{b^2 B g^2 n \operatorname{Log}[c+d x]^2}{2 d^3 i^3}-\frac{b^2 B g^2 n \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}$$

Problem 153: Result valid but suboptimal antiderivative.

$$\int \frac{(a g + b g x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(c i + d i x)^3} \, dx$$

Optimal (type 3, 89 leaves, 2 steps):

$$-\frac{B g n (a + b x)^2}{4 (b c - a d) i^3 (c + d x)^2} + \frac{g (a + b x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c - a d) i^3 (c + d x)^2}$$

Result (type 3, 201 leaves, 10 steps):

$$-\frac{B (b c - a d) g n}{4 d^2 i^3 (c + d x)^2} + \frac{b B g n}{2 d^2 i^3 (c + d x)} + \frac{b^2 B g n \operatorname{Log}[a + b x]}{2 d^2 (b c - a d) i^3} + \frac{(b c - a d) g \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^2 i^3 (c + d x)^2} - \frac{b g \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^2 i^3 (c + d x)} - \frac{b^2 B g n \operatorname{Log}[c + d x]}{2 d^2 (b c - a d) i^3}$$

Problem 155: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(a g + b g x) (c i + d i x)^3} \, dx$$

Optimal (type 3, 254 leaves, 4 steps):

$$-\frac{B n \left(4 b - \frac{d (a+b x)}{c+d x}\right)^2}{4 (b c - a d)^3 g i^3} + \frac{d^2 (a + b x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c - a d)^3 g i^3 (c + d x)^2} - \frac{2 b d (a + b x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c - a d)^3 g i^3 (c + d x)} + \frac{b^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{(b c - a d)^3 g i^3} - \frac{b^2 B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2}{2 (b c - a d)^3 g i^3}$$

Result (type 4, 557 leaves, 26 steps):

$$-\frac{B n}{4 (b c-a d) g i^3 (c+d x)^2}-\frac{3 b B n}{2 (b c-a d)^2 g i^3 (c+d x)}-\frac{3 b^2 B n \text{Log}[a+b x]}{2 (b c-a d)^3 g i^3}-\frac{b^2 B n \text{Log}[a+b x]^2}{2 (b c-a d)^3 g i^3}+\frac{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{2 (b c-a d) g i^3 (c+d x)^2}+$$
$$\frac{b \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^2 g i^3 (c+d x)}+\frac{b^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g i^3}+\frac{3 b^2 B n \text{Log}[c+d x]}{2 (b c-a d)^3 g i^3}+$$
$$\frac{b^2 B n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^3 g i^3}-\frac{b^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{(b c-a d)^3 g i^3}-\frac{b^2 B n \text{Log}[c+d x]^2}{2 (b c-a d)^3 g i^3}+$$
$$\frac{b^2 B n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}+\frac{b^2 B n \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}+\frac{b^2 B n \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}$$

Problem 156: Result unnecessarily involves higher level functions.

$$\int \frac{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(a g+b g x)^2 (c i+d i x)^3} \, dx$$

Optimal (type 3, 381 leaves, 4 steps):

$$\frac{B d^3 n (a+b x)^2}{4 (b c-a d)^4 g^2 i^3 (c+d x)^2}-\frac{3 b B d^2 n (a+b x)}{(b c-a d)^4 g^2 i^3 (c+d x)}-\frac{b^3 B n (c+d x)}{(b c-a d)^4 g^2 i^3 (a+b x)}-$$
$$\frac{d^3 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^4 g^2 i^3 (c+d x)^2}+\frac{3 b d^2 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^2 i^3 (c+d x)}-$$
$$\frac{b^3 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^2 i^3 (a+b x)}-\frac{3 b^2 d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{a+b x}{c+d x}\right]}{(b c-a d)^4 g^2 i^3}+\frac{3 b^2 B d n \text{Log}\left[\frac{a+b x}{c+d x}\right]^2}{2 (b c-a d)^4 g^2 i^3}$$

Result (type 4, 657 leaves, 30 steps):

$$-\frac{b^2 B n}{(b c-a d)^3 g^2 i^3 (a+b x)}+\frac{B d n}{4 (b c-a d)^2 g^2 i^3 (c+d x)^2}+\frac{5 b B d n}{2 (b c-a d)^3 g^2 i^3 (c+d x)}+\frac{3 b^2 B d n \text{Log}[a+b x]}{2 (b c-a d)^4 g^2 i^3}+\frac{3 b^2 B d n \text{Log}[a+b x]^2}{2 (b c-a d)^4 g^2 i^3}-\frac{b^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^2 i^3 (a+b x)}-\frac{d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^2 g^2 i^3 (c+d x)^2}-\frac{2 b d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^2 i^3 (c+d x)}-\frac{3 b^2 d \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^2 i^3}-\frac{3 b^2 B d n \text{Log}[c+d x]}{2 (b c-a d)^4 g^2 i^3}-\frac{3 b^2 B d n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^4 g^2 i^3}+\frac{3 b^2 d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{(b c-a d)^4 g^2 i^3}+\frac{3 b^2 B d n \text{Log}[c+d x]^2}{2 (b c-a d)^4 g^2 i^3}-\frac{3 b^2 B d n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^4 g^2 i^3}-\frac{3 b^2 B d n \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^4 g^2 i^3}-\frac{3 b^2 B d n \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^4 g^2 i^3}$$

Problem 157: Result unnecessarily involves higher level functions.

$$\int \frac{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(a g+b g x)^3 (c i+d i x)^3} \, dx$$

Optimal (type 3, 483 leaves, 5 steps):

$$-\frac{B d^4 n (a+b x)^2}{4 (b c-a d)^5 g^3 i^3 (c+d x)^2}+\frac{4 b B d^3 n (a+b x)}{(b c-a d)^5 g^3 i^3 (c+d x)}+\frac{4 b^3 B d n (c+d x)}{(b c-a d)^5 g^3 i^3 (a+b x)}-\frac{b^4 B n (c+d x)^2}{4 (b c-a d)^5 g^3 i^3 (a+b x)^2}+\frac{d^4 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^5 g^3 i^3 (c+d x)^2}-\frac{4 b d^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^5 g^3 i^3 (c+d x)}+\frac{4 b^3 d (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^5 g^3 i^3 (a+b x)}-\frac{b^4 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^5 g^3 i^3 (a+b x)^2}+\frac{6 b^2 d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{a+b x}{c+d x}\right]}{(b c-a d)^5 g^3 i^3}-\frac{3 b^2 B d^2 n \text{Log}\left[\frac{a+b x}{c+d x}\right]^2}{(b c-a d)^5 g^3 i^3}$$

Result (type 4, 701 leaves, 34 steps):

$$-\frac{b^2 B n}{4 (b c-a d)^3 g^3 i^3 (a+b x)^2}+\frac{7 b^2 B d n}{2 (b c-a d)^4 g^3 i^3 (a+b x)}-\frac{B d^2 n}{4 (b c-a d)^3 g^3 i^3 (c+d x)^2}-\frac{7 b B d^2 n}{2 (b c-a d)^4 g^3 i^3 (c+d x)}-\frac{3 b^2 B d^2 n \text{Log}[a+b x]^2}{(b c-a d)^5 g^3 i^3}-\frac{b^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^3 g^3 i^3 (a+b x)^2}+\frac{3 b^2 d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^3 i^3 (a+b x)}+\frac{d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^3 g^3 i^3 (c+d x)^2}+\frac{3 b d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^3 i^3 (c+d x)}+\frac{6 b^2 d^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^5 g^3 i^3}+\frac{6 b^2 B d^2 n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^5 g^3 i^3}-\frac{6 b^2 d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{(b c-a d)^5 g^3 i^3}-\frac{3 b^2 B d^2 n \text{Log}[c+d x]^2}{(b c-a d)^5 g^3 i^3}+\frac{6 b^2 B d^2 n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}+\frac{6 b^2 B d^2 n \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}+\frac{6 b^2 B d^2 n \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}$$

Problem 158: Result unnecessarily involves higher level functions.

$$\int \frac{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(a g+b g x)^4 (c i+d i x)^3} \, dx$$

Optimal (type 3, 587 leaves, 8 steps):

$$\frac{B d^5 n (a+b x)^2}{4 (b c-a d)^6 g^4 i^3 (c+d x)^2}-\frac{5 b B d^4 n (a+b x)}{(b c-a d)^6 g^4 i^3 (c+d x)}-\frac{10 b^3 B d^2 n (c+d x)}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 B d n (c+d x)^2}{4 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{b^5 B n (c+d x)^3}{9 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{d^5 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^6 g^4 i^3 (c+d x)^2}+\frac{5 b d^4 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^6 g^4 i^3 (c+d x)}-\frac{10 b^3 d^2 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 d (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{b^5 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{10 b^2 d^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{a+b x}{c+d x}\right]}{(b c-a d)^6 g^4 i^3}+\frac{5 b^2 B d^3 n \text{Log}\left[\frac{a+b x}{c+d x}\right]^2}{(b c-a d)^6 g^4 i^3}$$

Result (type 4, 859 leaves, 38 steps):

$$-\frac{b^2 B n}{9 (b c-a d)^3 g^4 i^3 (a+b x)^3}+\frac{11 b^2 B d n}{12 (b c-a d)^4 g^4 i^3 (a+b x)^2}-\frac{47 b^2 B d^2 n}{6 (b c-a d)^5 g^4 i^3 (a+b x)}+\frac{B d^3 n}{4 (b c-a d)^4 g^4 i^3 (c+d x)^2}+\frac{9 b B d^3 n}{2 (b c-a d)^5 g^4 i^3 (c+d x)}-\frac{10 b^2 B d^3 n \operatorname{Log}[a+b x]}{3 (b c-a d)^6 g^4 i^3}+\frac{5 b^2 B d^3 n \operatorname{Log}[a+b x]^2}{(b c-a d)^6 g^4 i^3}-\frac{b^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 (b c-a d)^3 g^4 i^3 (a+b x)^3}+\frac{3 b^2 d \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^4 g^4 i^3 (a+b x)^2}-\frac{6 b^2 d^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^5 g^4 i^3 (a+b x)}-\frac{d^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^4 g^4 i^3 (c+d x)^2}-\frac{4 b d^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^5 g^4 i^3 (c+d x)}-\frac{10 b^2 d^3 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 B d^3 n \operatorname{Log}[c+d x]}{3 (b c-a d)^6 g^4 i^3}-\frac{10 b^2 B d^3 n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 d^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{(b c-a d)^6 g^4 i^3}+\frac{5 b^2 B d^3 n \operatorname{Log}[c+d x]^2}{(b c-a d)^6 g^4 i^3}-\frac{10 b^2 B d^3 n \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}-\frac{10 b^2 B d^3 n \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}-\frac{10 b^2 B d^3 n \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}$$

Problem 159: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^3 (c i+d i x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 584 leaves, 11 steps):

$$\frac{3 B^2 (b c - a d)^4 g^3 i n^2 x}{10 b d^3} - \frac{3 B^2 (b c - a d)^3 g^3 i n^2 (c + d x)^2}{20 d^4} + \frac{b B^2 (b c - a d)^2 g^3 i n^2 (c + d x)^3}{30 d^4} - \frac{B (b c - a d)^2 g^3 i n (a + b x)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b^2 d} - \frac{B (b c - a d) g^3 i n (a + b x)^4 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 b^2} + \frac{(b c - a d) g^3 i (a + b x)^4 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{20 b^2} + \frac{g^3 i (a + b x)^4 (c + d x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 b} + \frac{B (b c - a d)^3 g^3 i n (a + b x)^2 \left(3 A + B n + 3 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{60 b^2 d^2} - \frac{B (b c - a d)^4 g^3 i n (a + b x) \left(6 A + 5 B n + 6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{60 b^2 d^3} - \frac{B (b c - a d)^5 g^3 i n \left(6 A + 11 B n + 6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{60 b^2 d^4} - \frac{B^2 (b c - a d)^5 g^3 i n^2 \text{Log}[c + d x]}{10 b^2 d^4} - \frac{B^2 (b c - a d)^5 g^3 i n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{10 b^2 d^4}$$

Result (type 4, 670 leaves, 52 steps):

$$-\frac{A B (b c - a d)^4 g^3 i n x}{10 b d^3} + \frac{B^2 (b c - a d)^4 g^3 i n^2 x}{60 b d^3} - \frac{B^2 (b c - a d)^3 g^3 i n^2 (a + b x)^2}{30 b^2 d^2} + \frac{B^2 (b c - a d)^2 g^3 i n^2 (a + b x)^3}{30 b^2 d} - \frac{B^2 (b c - a d)^4 g^3 i n (a + b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{10 b^2 d^3} + \frac{B (b c - a d)^3 g^3 i n (a + b x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{20 b^2 d^2} - \frac{B (b c - a d)^2 g^3 i n (a + b x)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b^2 d} - \frac{B (b c - a d) g^3 i n (a + b x)^4 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 b^2} + \frac{(b c - a d) g^3 i (a + b x)^4 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 b^2} + \frac{d g^3 i (a + b x)^5 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 b^2} + \frac{B^2 (b c - a d)^5 g^3 i n^2 \text{Log}[c + d x]}{12 b^2 d^4} - \frac{B^2 (b c - a d)^5 g^3 i n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c + d x]}{10 b^2 d^4} + \frac{B (b c - a d)^5 g^3 i n \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c + d x]}{10 b^2 d^4} + \frac{B^2 (b c - a d)^5 g^3 i n^2 \text{Log}[c + d x]^2}{20 b^2 d^4} - \frac{B^2 (b c - a d)^5 g^3 i n^2 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{10 b^2 d^4}$$

Problem 160: Result valid but suboptimal antiderivative.

$$\int (a g + b g x)^2 (c i + d i x) \left(A + B \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 487 leaves, 10 steps):

$$-\frac{B^2 (b c - a d)^3 g^2 i n^2 x}{3 b d^2} + \frac{B^2 (b c - a d)^2 g^2 i n^2 (c + d x)^2}{12 d^3} - \frac{B (b c - a d)^2 g^2 i n (a + b x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{12 b^2 d} - \frac{B (b c - a d) g^2 i n (a + b x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b^2} + \frac{(b c - a d) g^2 i (a + b x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{12 b^2} + \frac{g^2 i (a + b x)^3 (c + d x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 b} + \frac{B (b c - a d)^3 g^2 i n (a + b x) \left(2 A + B n + 2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{12 b^2 d^2} + \frac{B (b c - a d)^4 g^2 i n \left(2 A + 3 B n + 2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{12 b^2 d^3} + \frac{B^2 (b c - a d)^4 g^2 i n^2 \operatorname{Log}[c + d x]}{6 b^2 d^3} + \frac{B^2 (b c - a d)^4 g^2 i n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{6 b^2 d^3}$$

Result (type 4, 578 leaves, 44 steps):

$$\frac{A B (b c - a d)^3 g^2 i n x}{6 b d^2} - \frac{B^2 (b c - a d)^3 g^2 i n^2 x}{12 b d^2} + \frac{B^2 (b c - a d)^2 g^2 i n^2 (a + b x)^2}{12 b^2 d} + \frac{B^2 (b c - a d)^3 g^2 i n (a + b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{6 b^2 d^2} - \frac{B (b c - a d)^2 g^2 i n (a + b x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{12 b^2 d} - \frac{B (b c - a d) g^2 i n (a + b x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b^2} + \frac{(b c - a d) g^2 i (a + b x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b^2} + \frac{d g^2 i (a + b x)^4 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 b^2} - \frac{B^2 (b c - a d)^4 g^2 i n^2 \operatorname{Log}[c + d x]}{12 b^2 d^3} + \frac{B^2 (b c - a d)^4 g^2 i n^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c + d x]}{6 b^2 d^3} - \frac{B (b c - a d)^4 g^2 i n \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c + d x]}{6 b^2 d^3} - \frac{B^2 (b c - a d)^4 g^2 i n^2 \operatorname{Log}[c + d x]^2}{12 b^2 d^3} + \frac{B^2 (b c - a d)^4 g^2 i n^2 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{6 b^2 d^3}$$

Problem 161: Result valid but suboptimal antiderivative.

$$\int (a g + b g x) (c i + d i x) \left(A + B \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 372 leaves, 9 steps):

$$\frac{B^2 (b c - a d)^2 g i n^2 x}{3 b d} - \frac{B (b c - a d)^2 g i n (a + b x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^2 d} - \frac{B (b c - a d) g i n (a + b x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^2} + \frac{(b c - a d) g i (a + b x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{6 b^2} + \frac{g i (a + b x)^2 (c + d x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b} - \frac{B (b c - a d)^3 g i n \left(A + B n + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{3 b^2 d^2} - \frac{B^2 (b c - a d)^3 g i n^2 \operatorname{Log}[c + d x]}{3 b^2 d^2} - \frac{B^2 (b c - a d)^3 g i n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{3 b^2 d^2}$$

Result (type 4, 1323 leaves, 72 steps):

$$-\frac{2}{3} A b B \left(\frac{a^2}{b^2}-\frac{c^2}{d^2}\right) d g i n x-\frac{A B (b c-a d) (b c+a d) g i n x}{b d}+\frac{B^2 (b c-a d)^2 g i n^2 x}{3 b d}+$$
$$\frac{a^2 B^2 (b c-a d) g i n^2 \text{Log}[a+b x]}{3 b^2}-\frac{a^2 B^2 c g i n^2 \text{Log}[a+b x]^2}{b}-\frac{a^3 B^2 d g i n^2 \text{Log}[a+b x]^2}{3 b^2}+$$
$$\frac{a^2 B^2 (b c+a d) g i n^2 \text{Log}[a+b x]^2}{2 b^2}-\frac{B^2 (b c-a d) (b c+a d) g i n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{3 b^2 d}-$$
$$\frac{1}{3} B (b c-a d) g i n x^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)+\frac{2 a^2 B c g i n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b}+$$
$$\frac{2 a^3 B d g i n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^2}-$$
$$\frac{a^2 B (b c+a d) g i n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^2}+$$
$$a c g i x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2+\frac{1}{2} (b c+a d) g i x^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2+$$
$$\frac{1}{3} b d g i x^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2-\frac{B^2 c^2 (b c-a d) g i n^2 \text{Log}[c+d x]}{3 d^2}+$$
$$\frac{B^2 (b c-a d)^2 (b c+a d) g i n^2 \text{Log}[c+d x]}{3 b^2 d^2}+\frac{2 b B^2 c^3 g i n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 d^2}+$$
$$\frac{2 a B^2 c^2 g i n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d}-\frac{B^2 c^2 (b c+a d) g i n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^2}-$$
$$\frac{2 b B c^3 g i n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{3 d^2}-\frac{2 a B c^2 g i n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{d}+$$
$$\frac{B c^2 (b c+a d) g i n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{d^2}-$$
$$\frac{b B^2 c^3 g i n^2 \text{Log}[c+d x]^2}{3 d^2}-\frac{a B^2 c^2 g i n^2 \text{Log}[c+d x]^2}{d}+$$
$$\frac{B^2 c^2 (b c+a d) g i n^2 \text{Log}[c+d x]^2}{2 d^2}+\frac{2 a^2 B^2 c g i n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b}+$$
$$\frac{2 a^3 B^2 d g i n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b^2}-\frac{a^2 B^2 (b c+a d) g i n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2}+$$
$$\frac{2 a^2 B^2 c g i n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b}+\frac{2 a^3 B^2 d g i n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 b^2}-$$
$$\frac{a^2 B^2 (b c+a d) g i n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^2}+\frac{2 b B^2 c^3 g i n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 d^2}+$$
$$\frac{2 a B^2 c^2 g i n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d}-\frac{B^2 c^2 (b c+a d) g i n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2}$$

Problem 162: Result valid but suboptimal antiderivative.

$$\int (c\, i + d\, i\, x) \left(A + B \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 220 leaves, 7 steps):

$$-\frac{B (b c - a d)\, i\, n\, (a + b x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^2} + \frac{i (c + d x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d} + \frac{B^2 (b c - a d)^2\, i\, n^2 \operatorname{Log}[c + d x]}{b^2 d} + \frac{B (b c - a d)^2\, i\, n \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{b^2 d} - \frac{B^2 (b c - a d)^2\, i\, n^2 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^2 d}$$

Result (type 4, 307 leaves, 15 steps):

$$-\frac{A B (b c - a d)\, i\, n\, x}{b} + \frac{B^2 (b c - a d)^2\, i\, n^2 \operatorname{Log}[a + b x]^2}{2 b^2 d} - \frac{B^2 (b c - a d)\, i\, n\, (a + b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{b^2} - \frac{B (b c - a d)^2\, i\, n \operatorname{Log}[a + b x] \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^2 d} + \frac{i (c + d x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d} + \frac{B^2 (b c - a d)^2\, i\, n^2 \operatorname{Log}[c + d x]}{b^2 d} - \frac{B^2 (b c - a d)^2\, i\, n^2 \operatorname{Log}[a + b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2 d} - \frac{B^2 (b c - a d)^2\, i\, n^2 \operatorname{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{b^2 d}$$

Problem 163: Result valid but suboptimal antiderivative.

$$\int \frac{(c\, i + d\, i\, x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{a g + b g x} dx$$

Optimal (type 4, 306 leaves, 8 steps):

$$\frac{d\, i\, (a + b x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^2 g} + \frac{2 B (b c - a d)\, i\, n \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b^2 g} - \frac{(b c - a d)\, i \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \operatorname{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{b^2 g} + \frac{2 B^2 (b c - a d)\, i\, n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b^2 g} + \frac{2 B (b c - a d)\, i\, n \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^2 g} + \frac{2 B^2 (b c - a d)\, i\, n^2 \operatorname{PolyLog}\left[3, \frac{b (c+d x)}{d (a+b x)}\right]}{b^2 g}$$

Result (type 4, 692 leaves, 36 steps):

$$-\frac{A\,B\,(b\,c-a\,d)\,i\,n\,\text{Log}[a+b\,x]^2}{b^2\,g}-\frac{a\,B^2\,d\,i\,n^2\,\text{Log}[a+b\,x]^2}{b^2\,g}-$$
$$\frac{B^2\,(b\,c-a\,d)\,i\,\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{b^2\,g}-\frac{B^2\,(b\,c-a\,d)\,i\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{b^2\,g}+$$
$$\frac{2\,a\,B\,d\,i\,n\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,g}+\frac{d\,i\,x\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{b\,g}+$$
$$\frac{(b\,c-a\,d)\,i\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{b^2\,g}+\frac{2\,B^2\,c\,i\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{b\,g}-$$
$$\frac{2\,B\,c\,i\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{b\,g}-\frac{B^2\,c\,i\,n^2\,\text{Log}[c+d\,x]^2}{b\,g}+$$
$$\frac{2\,A\,B\,(b\,c-a\,d)\,i\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,g}+\frac{2\,a\,B^2\,d\,i\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,g}+$$
$$\frac{2\,A\,B\,(b\,c-a\,d)\,i\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^2\,g}+\frac{2\,a\,B^2\,d\,i\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^2\,g}+$$
$$\frac{2\,B^2\,c\,i\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b\,g}+\frac{2\,B^2\,(b\,c-a\,d)\,i\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b^2\,g}+$$
$$\frac{2\,B^2\,(b\,c-a\,d)\,i\,n^2\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b^2\,g}$$

Problem 164: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 4, 261 leaves, 7 steps):

$$-\frac{2\,B^2\,i\,n^2\,(c+d\,x)}{b\,g^2\,(a+b\,x)}-\frac{2\,B\,i\,n\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b\,g^2\,(a+b\,x)}-$$
$$\frac{i\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{b\,g^2\,(a+b\,x)}-\frac{d\,i\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2}+$$
$$\frac{2\,B\,d\,i\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2}+\frac{2\,B^2\,d\,i\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2}$$

Result (type 4, 766 leaves, 40 steps):

$$-\frac{2 B^2 (b c-a d) i n^2}{b^2 g^2 (a+b x)}-\frac{2 B^2 d i n^2 \text{Log}[a+b x]}{b^2 g^2}-\frac{A B d i n \text{Log}[a+b x]^2}{b^2 g^2}+\frac{B^2 d i n^2 \text{Log}[a+b x]^2}{b^2 g^2}-\frac{B^2 d i \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^2 g^2}-\frac{B^2 d i \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^2 g^2}-\frac{2 B (b c-a d) i n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^2 g^2 (a+b x)}-\frac{2 B d i n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^2 g^2}-\frac{(b c-a d) i \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^2 g^2 (a+b x)}+\frac{d i \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^2 g^2}+\frac{2 B^2 d i n^2 \text{Log}[c+d x]}{b^2 g^2}-\frac{2 B^2 d i n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^2 g^2}+\frac{2 B d i n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{b^2 g^2}+\frac{B^2 d i n^2 \text{Log}[c+d x]^2}{b^2 g^2}+\frac{2 A B d i n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2 g^2}-\frac{2 B^2 d i n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2 g^2}+\frac{2 A B d i n \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^2 g^2}-\frac{2 B^2 d i n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^2 g^2}-\frac{2 B^2 d i n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^2 g^2}+\frac{2 B^2 d i n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{b^2 g^2}+\frac{2 B^2 d i n^2 \text{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{b^2 g^2}$$

Problem 165: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^3} \, dx$$

Optimal (type 3, 151 leaves, 3 steps):

$$-\frac{B^2 i n^2 (c+d x)^2}{4 (b c-a d) g^3 (a+b x)^2}-\frac{B i n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d) g^3 (a+b x)^2}-\frac{i (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d) g^3 (a+b x)^2}$$

Result (type 4, 691 leaves, 54 steps):

$$-\frac{B^2 (b c-a d) i n^2}{4 b^2 g^3 (a+b x)^2}-\frac{B^2 d i n^2}{2 b^2 g^3 (a+b x)}-\frac{B^2 d^2 i n^2 \text{Log}[a+b x]}{2 b^2 (b c-a d) g^3}+$$
$$\frac{B^2 d^2 i n^2 \text{Log}[a+b x]^2}{2 b^2 (b c-a d) g^3}-\frac{B (b c-a d) i n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^2 g^3 (a+b x)^2}-$$
$$\frac{B d i n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^2 g^3 (a+b x)}-\frac{B d^2 i n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^2 (b c-a d) g^3}-$$
$$\frac{(b c-a d) i \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^2 g^3 (a+b x)^2}-\frac{d i \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^2 g^3 (a+b x)}+\frac{B^2 d^2 i n^2 \text{Log}[c+d x]}{2 b^2 (b c-a d) g^3}-$$
$$\frac{B^2 d^2 i n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^2 (b c-a d) g^3}+\frac{B d^2 i n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{b^2 (b c-a d) g^3}+$$
$$\frac{B^2 d^2 i n^2 \text{Log}[c+d x]^2}{2 b^2 (b c-a d) g^3}-\frac{B^2 d^2 i n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2 (b c-a d) g^3}-$$
$$\frac{B^2 d^2 i n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^2 (b c-a d) g^3}-\frac{B^2 d^2 i n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^2 (b c-a d) g^3}$$

Problem 166: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^4} \, dx$$

Optimal (type 3, 307 leaves, 7 steps):

$$\frac{B^2 d i n^2 (c+d x)^2}{4 (b c-a d)^2 g^4 (a+b x)^2}-\frac{2 b B^2 i n^2 (c+d x)^3}{27 (b c-a d)^2 g^4 (a+b x)^3}+$$
$$\frac{B d i n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^2 g^4 (a+b x)^2}-\frac{2 b B i n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^2 g^4 (a+b x)^3}+$$
$$\frac{d i (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^2 g^4 (a+b x)^2}-\frac{b i (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d)^2 g^4 (a+b x)^3}$$

Result (type 4, 800 leaves, 62 steps):

$$-\frac{2 B^2 (b c-a d) i n^2}{27 b^2 g^4 (a+b x)^3}+\frac{B^2 d i n^2}{36 b^2 g^4 (a+b x)^2}+\frac{5 B^2 d^2 i n^2}{18 b^2 (b c-a d) g^4 (a+b x)}+\frac{5 B^2 d^3 i n^2 \mathrm{Log}[a+b x]}{18 b^2 (b c-a d)^2 g^4}-$$
$$\frac{B^2 d^3 i n^2 \mathrm{Log}[a+b x]^2}{6 b^2 (b c-a d)^2 g^4}-\frac{2 B (b c-a d) i n \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 b^2 g^4 (a+b x)^3}-\frac{B d i n \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b^2 g^4 (a+b x)^2}+$$
$$\frac{B d^2 i n \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^2 (b c-a d) g^4 (a+b x)}+\frac{B d^3 i n \mathrm{Log}[a+b x] \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^2 (b c-a d)^2 g^4}-$$
$$\frac{(b c-a d) i \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b^2 g^4 (a+b x)^3}-\frac{d i \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^2 g^4 (a+b x)^2}-\frac{5 B^2 d^3 i n^2 \mathrm{Log}[c+d x]}{18 b^2 (b c-a d)^2 g^4}+$$
$$\frac{B^2 d^3 i n^2 \mathrm{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \mathrm{Log}[c+d x]}{3 b^2 (b c-a d)^2 g^4}-\frac{B d^3 i n \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \mathrm{Log}[c+d x]}{3 b^2 (b c-a d)^2 g^4}-$$
$$\frac{B^2 d^3 i n^2 \mathrm{Log}[c+d x]^2}{6 b^2 (b c-a d)^2 g^4}+\frac{B^2 d^3 i n^2 \mathrm{Log}[a+b x] \mathrm{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b^2 (b c-a d)^2 g^4}+$$
$$\frac{B^2 d^3 i n^2 \mathrm{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 b^2 (b c-a d)^2 g^4}+\frac{B^2 d^3 i n^2 \mathrm{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 b^2 (b c-a d)^2 g^4}$$

Problem 167: Result unnecessarily involves higher level functions.

$$\int \frac{(c i+d i x) \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^5} \, dx$$

Optimal (type 3, 475 leaves, 9 steps):

$$-\frac{B^2 d^2 i n^2 (c+d x)^2}{4 (b c-a d)^3 g^5 (a+b x)^2}+\frac{4 b B^2 d i n^2 (c+d x)^3}{27 (b c-a d)^3 g^5 (a+b x)^3}-\frac{b^2 B^2 i n^2 (c+d x)^4}{32 (b c-a d)^3 g^5 (a+b x)^4}-$$
$$\frac{B d^2 i n (c+d x)^2 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^3 g^5 (a+b x)^2}+\frac{4 b B d i n (c+d x)^3 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^3 g^5 (a+b x)^3}-$$
$$\frac{b^2 B i n (c+d x)^4 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{8 (b c-a d)^3 g^5 (a+b x)^4}-\frac{d^2 i (c+d x)^2 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^3 g^5 (a+b x)^2}+$$
$$\frac{2 b d i (c+d x)^3 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d)^3 g^5 (a+b x)^3}-\frac{b^2 i (c+d x)^4 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 (b c-a d)^3 g^5 (a+b x)^4}$$

Result (type 4, 892 leaves, 70 steps):

$$-\frac{B^2\,(b\,c-a\,d)\,i\,n^2}{32\,b^2\,g^5\,(a+b\,x)^4}+\frac{5\,B^2\,d\,i\,n^2}{216\,b^2\,g^5\,(a+b\,x)^3}+\frac{B^2\,d^2\,i\,n^2}{144\,b^2\,(b\,c-a\,d)\,g^5\,(a+b\,x)^2}-$$

$$\frac{13\,B^2\,d^3\,i\,n^2}{72\,b^2\,(b\,c-a\,d)^2\,g^5\,(a+b\,x)}-\frac{13\,B^2\,d^4\,i\,n^2\,\text{Log}[a+b\,x]}{72\,b^2\,(b\,c-a\,d)^3\,g^5}+\frac{B^2\,d^4\,i\,n^2\,\text{Log}[a+b\,x]^2}{12\,b^2\,(b\,c-a\,d)^3\,g^5}-$$

$$\frac{B\,(b\,c-a\,d)\,i\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{8\,b^2\,g^5\,(a+b\,x)^4}-\frac{B\,d\,i\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{18\,b^2\,g^5\,(a+b\,x)^3}+$$

$$\frac{B\,d^2\,i\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{12\,b^2\,(b\,c-a\,d)\,g^5\,(a+b\,x)^2}-\frac{B\,d^3\,i\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,b^2\,(b\,c-a\,d)^2\,g^5\,(a+b\,x)}-$$

$$\frac{B\,d^4\,i\,n\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,b^2\,(b\,c-a\,d)^3\,g^5}-\frac{(b\,c-a\,d)\,i\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{4\,b^2\,g^5\,(a+b\,x)^4}-$$

$$\frac{d\,i\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,b^2\,g^5\,(a+b\,x)^3}+\frac{13\,B^2\,d^4\,i\,n^2\,\text{Log}[c+d\,x]}{72\,b^2\,(b\,c-a\,d)^3\,g^5}-$$

$$\frac{B^2\,d^4\,i\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{6\,b^2\,(b\,c-a\,d)^3\,g^5}+\frac{B\,d^4\,i\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{6\,b^2\,(b\,c-a\,d)^3\,g^5}+$$

$$\frac{B^2\,d^4\,i\,n^2\,\text{Log}[c+d\,x]^2}{12\,b^2\,(b\,c-a\,d)^3\,g^5}-\frac{B^2\,d^4\,i\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{6\,b^2\,(b\,c-a\,d)^3\,g^5}-$$

$$\frac{B^2\,d^4\,i\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{6\,b^2\,(b\,c-a\,d)^3\,g^5}-\frac{B^2\,d^4\,i\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{6\,b^2\,(b\,c-a\,d)^3\,g^5}$$

Problem 168: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 766 leaves, 17 steps):

$$\frac{3 B^2 (b c-a d)^5 g^3 i^2 n^2 x}{20 b^2 d^3}+\frac{B^2 (b c-a d)^2 g^3 i^2 n^2 (a+b x)^4}{60 b^3}-\frac{3 B^2 (b c-a d)^4 g^3 i^2 n^2 (c+d x)^2}{40 b d^4}+$$
$$\frac{B^2 (b c-a d)^3 g^3 i^2 n^2 (c+d x)^3}{60 d^4}-\frac{B (b c-a d)^3 g^3 i^2 n (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{90 b^3 d}-$$
$$\frac{B (b c-a d)^2 g^3 i^2 n (a+b x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{20 b^3}-$$
$$\frac{B (b c-a d) g^3 i^2 n (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{15 b^2}+$$
$$\frac{(b c-a d)^2 g^3 i^2 (a+b x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{60 b^3}+$$
$$\frac{(b c-a d) g^3 i^2 (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{15 b^2}+$$
$$\frac{g^3 i^2 (a+b x)^4 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{6 b}+$$
$$\frac{B (b c-a d)^4 g^3 i^2 n (a+b x)^2 \left(3 A+B n+3 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{180 b^3 d^2}-$$
$$\frac{B (b c-a d)^5 g^3 i^2 n (a+b x) \left(6 A+5 B n+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{180 b^3 d^3}-$$
$$\frac{B (b c-a d)^6 g^3 i^2 n \left(6 A+11 B n+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{180 b^3 d^4}-$$
$$\frac{B^2 (b c-a d)^6 g^3 i^2 n^2 \text{Log}[c+d x]}{20 b^3 d^4}-\frac{B^2 (b c-a d)^6 g^3 i^2 n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{30 b^3 d^4}$$

Result (type 4, 848 leaves, 83 steps) :

$$-\frac{A B (b c-a d)^5 g^3 i^2 n x}{30 b^2 d^3}+\frac{B^2 (b c-a d)^5 g^3 i^2 n^2 x}{45 b^2 d^3}-\frac{7 B^2 (b c-a d)^4 g^3 i^2 n^2 (a+b x)^2}{360 b^3 d^2}+\frac{B^2 (b c-a d)^3 g^3 i^2 n^2 (a+b x)^3}{60 b^3 d}+\frac{B^2 (b c-a d)^2 g^3 i^2 n^2 (a+b x)^4}{60 b^3}-\frac{B^2 (b c-a d)^5 g^3 i^2 n (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{30 b^3 d^3}+\frac{B (b c-a d)^4 g^3 i^2 n (a+b x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{60 b^3 d^2}-\frac{B (b c-a d)^3 g^3 i^2 n (a+b x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{90 b^3 d}-\frac{7 B (b c-a d)^2 g^3 i^2 n (a+b x)^4 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{60 b^3}-\frac{B d (b c-a d) g^3 i^2 n (a+b x)^5 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{15 b^3}+\frac{(b c-a d)^2 g^3 i^2 (a+b x)^4 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 b^3}+\frac{2 d (b c-a d) g^3 i^2 (a+b x)^5 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 b^3}+\frac{d^2 g^3 i^2 (a+b x)^6 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{6 b^3}+\frac{B^2 (b c-a d)^6 g^3 i^2 n^2 \operatorname{Log}[c+d x]}{90 b^3 d^4}-\frac{B^2 (b c-a d)^6 g^3 i^2 n^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{30 b^3 d^4}+\frac{B (b c-a d)^6 g^3 i^2 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{30 b^3 d^4}+\frac{B^2 (b c-a d)^6 g^3 i^2 n^2 \operatorname{Log}[c+d x]^2}{60 b^3 d^4}-\frac{B^2 (b c-a d)^6 g^3 i^2 n^2 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{30 b^3 d^4}$$

Problem 169: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^2 (c i+d i x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 819 leaves, 15 steps):

$$-\frac{B^2 (b c-a d)^4 g^2 i^2 n^2 x}{10 b^2 d^2}-\frac{B^2 (b c-a d)^3 g^2 i^2 n^2 (c+d x)^2}{20 b d^3}+$$
$$\frac{B^2 (b c-a d)^2 g^2 i^2 n^2 (c+d x)^3}{30 d^3}-\frac{B (b c-a d)^3 g^2 i^2 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b^3 d}-$$
$$\frac{B (b c-a d)^2 g^2 i^2 n (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{15 b^3}-$$
$$\frac{B (b c-a d)^3 g^2 i^2 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{5 b d^3}+$$
$$\frac{4 B (b c-a d)^2 g^2 i^2 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{15 d^3}-$$
$$\frac{b B (b c-a d) g^2 i^2 n (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 d^3}+$$
$$\frac{(b c-a d)^2 g^2 i^2 (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{30 b^3}+$$
$$\frac{(b c-a d) g^2 i^2 (a+b x)^3 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{10 b^2}+$$
$$\frac{g^2 i^2 (a+b x)^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 b}+$$
$$\frac{B (b c-a d)^4 g^2 i^2 n (a+b x) \left(2 A+B n+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b^3 d^2}+$$
$$\frac{B (b c-a d)^5 g^2 i^2 n \left(2 A+3 B n+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{30 b^3 d^3}+$$
$$\frac{B^2 (b c-a d)^5 g^2 i^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{30 b^3 d^3}+\frac{B^2 (b c-a d)^5 g^2 i^2 n^2 \text{Log}[c+d x]}{10 b^3 d^3}+$$
$$\frac{B^2 (b c-a d)^5 g^2 i^2 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{15 b^3 d^3}$$

Result (type 4, 714 leaves, 71 steps) :

$$\frac{A\,B\,(b\,c-a\,d)^4\,g^2\,i^2\,n\,x}{15\,b^2\,d^2}-\frac{B^2\,(b\,c-a\,d)^4\,g^2\,i^2\,n^2\,x}{15\,b^2\,d^2}+\frac{B^2\,(b\,c-a\,d)^3\,g^2\,i^2\,n^2\,(a+b\,x)^2}{20\,b^3\,d}+$$

$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,i^2\,n^2\,(a+b\,x)^3}{30\,b^3}+\frac{B^2\,(b\,c-a\,d)^4\,g^2\,i^2\,n\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{15\,b^3\,d^2}-$$

$$\frac{B\,(b\,c-a\,d)^3\,g^2\,i^2\,n\,(a+b\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{30\,b^3\,d}-$$

$$\frac{B\,(b\,c-a\,d)^2\,g^2\,i^2\,n\,(a+b\,x)^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{5\,b^3}-$$

$$\frac{B\,d\,(b\,c-a\,d)\,g^2\,i^2\,n\,(a+b\,x)^4\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{10\,b^3}+$$

$$\frac{(b\,c-a\,d)^2\,g^2\,i^2\,(a+b\,x)^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,b^3}+$$

$$\frac{d\,(b\,c-a\,d)\,g^2\,i^2\,(a+b\,x)^4\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,b^3}+$$

$$\frac{d^2\,g^2\,i^2\,(a+b\,x)^5\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{5\,b^3}+\frac{B^2\,(b\,c-a\,d)^5\,g^2\,i^2\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{15\,b^3\,d^3}-$$

$$\frac{B\,(b\,c-a\,d)^5\,g^2\,i^2\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[c+d\,x]}{15\,b^3\,d^3}-$$

$$\frac{B^2\,(b\,c-a\,d)^5\,g^2\,i^2\,n^2\,\mathrm{Log}[c+d\,x]^2}{30\,b^3\,d^3}+\frac{B^2\,(b\,c-a\,d)^5\,g^2\,i^2\,n^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{15\,b^3\,d^3}$$

Problem 170: Result valid but suboptimal antiderivative.

$$\int (a\,g+b\,g\,x)\,(c\,i+d\,i\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 635 leaves, 14 steps):

$$\frac{B^2 (b c - a d)^3 g i^2 n^2 x}{12 b^2 d} + \frac{B^2 (b c - a d)^2 g i^2 n^2 (c + d x)^2}{12 b d^2} -$$
$$\frac{B (b c - a d)^3 g i^2 n (a + b x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b^3 d} -$$
$$\frac{B (b c - a d)^2 g i^2 n (a + b x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b^3} +$$
$$\frac{B (b c - a d)^2 g i^2 n (c + d x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 b d^2} -$$
$$\frac{B (b c - a d) g i^2 n (c + d x)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 d^2} +$$
$$\frac{(b c - a d)^2 g i^2 (a + b x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{12 b^3} +$$
$$\frac{(b c - a d) g i^2 (a + b x)^2 (c + d x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{6 b^2} +$$
$$\frac{g i^2 (a + b x)^2 (c + d x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 b} -$$
$$\frac{B (b c - a d)^4 g i^2 n \left(A + B n + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{6 b^3 d^2} - \frac{B^2 (b c - a d)^4 g i^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^3 d^2} -$$
$$\frac{B^2 (b c - a d)^4 g i^2 n^2 \text{Log}[c + d x]}{4 b^3 d^2} - \frac{B^2 (b c - a d)^4 g i^2 n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{6 b^3 d^2}$$

Result (type 4, 614 leaves, 44 steps):

$$\frac{A\,B\,(b\,c-a\,d)^3\,g\,i^2\,n\,x}{6\,b^2\,d}+\frac{B^2\,(b\,c-a\,d)^3\,g\,i^2\,n^2\,x}{12\,b^2\,d}+\frac{B^2\,(b\,c-a\,d)^2\,g\,i^2\,n^2\,(c+d\,x)^2}{12\,b\,d^2}+$$

$$\frac{B^2\,(b\,c-a\,d)^4\,g\,i^2\,n^2\,\text{Log}[a+b\,x]}{12\,b^3\,d^2}-\frac{B^2\,(b\,c-a\,d)^4\,g\,i^2\,n^2\,\text{Log}[a+b\,x]^2}{12\,b^3\,d^2}+$$

$$\frac{B^2\,(b\,c-a\,d)^3\,g\,i^2\,n\,(a+b\,x)\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{6\,b^3\,d}+\frac{B\,(b\,c-a\,d)^2\,g\,i^2\,n\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{12\,b\,d^2}-$$

$$\frac{B\,(b\,c-a\,d)\,g\,i^2\,n\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,d^2}+$$

$$\frac{B\,(b\,c-a\,d)^4\,g\,i^2\,n\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,b^3\,d^2}-$$

$$\frac{(b\,c-a\,d)\,g\,i^2\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,d^2}+$$

$$\frac{b\,g\,i^2\,(c+d\,x)^4\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{4\,d^2}-\frac{B^2\,(b\,c-a\,d)^4\,g\,i^2\,n^2\,\text{Log}[c+d\,x]}{6\,b^3\,d^2}+$$

$$\frac{B^2\,(b\,c-a\,d)^4\,g\,i^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{6\,b^3\,d^2}+\frac{B^2\,(b\,c-a\,d)^4\,g\,i^2\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{6\,b^3\,d^2}$$

Problem 171: Result valid but suboptimal antiderivative.

$$\int(c\,i+d\,i\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 361 leaves, 11 steps):

$$\frac{B^2\,(b\,c-a\,d)^2\,i^2\,n^2\,x}{3\,b^2}-\frac{2\,B\,(b\,c-a\,d)^2\,i^2\,n\,(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b^3}-$$

$$\frac{B\,(b\,c-a\,d)\,i^2\,n\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,d}+\frac{i^2\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,d}+$$

$$\frac{B^2\,(b\,c-a\,d)^3\,i^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{3\,b^3\,d}+\frac{B^2\,(b\,c-a\,d)^3\,i^2\,n^2\,\text{Log}[c+d\,x]}{b^3\,d}+$$

$$\frac{2\,B\,(b\,c-a\,d)^3\,i^2\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{3\,b^3\,d}-$$

$$\frac{2\,B^2\,(b\,c-a\,d)^3\,i^2\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{3\,b^3\,d}$$

Result (type 4, 454 leaves, 19 steps):

$$-\frac{2\,A\,B\,(b\,c-a\,d)^2\,i^2\,n\,x}{3\,b^2}+\frac{B^2\,(b\,c-a\,d)^2\,i^2\,n^2\,x}{3\,b^2}+$$
$$\frac{B^2\,(b\,c-a\,d)^3\,i^2\,n^2\,\text{Log}[a+b\,x]}{3\,b^3\,d}+\frac{B^2\,(b\,c-a\,d)^3\,i^2\,n^2\,\text{Log}[a+b\,x]^2}{3\,b^3\,d}-$$
$$\frac{2\,B^2\,(b\,c-a\,d)^2\,i^2\,n\,(a+b\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{3\,b^3}-\frac{B\,(b\,c-a\,d)\,i^2\,n\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,d}-$$
$$\frac{2\,B\,(b\,c-a\,d)^3\,i^2\,n\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b^3\,d}+$$
$$\frac{i^2\,(c+d\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,d}+\frac{2\,B^2\,(b\,c-a\,d)^3\,i^2\,n^2\,\text{Log}[c+d\,x]}{3\,b^3\,d}-$$
$$\frac{2\,B^2\,(b\,c-a\,d)^3\,i^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b^3\,d}-\frac{2\,B^2\,(b\,c-a\,d)^3\,i^2\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,b^3\,d}$$

Problem 172: Result valid but suboptimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 572 leaves, 15 steps):

$$-\frac{B\,d\,(b\,c-a\,d)\,i^2\,n\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^3\,g}+$$
$$\frac{d\,(b\,c-a\,d)\,i^2\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{b^3\,g}+\frac{i^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,b\,g}+$$
$$\frac{2\,B\,(b\,c-a\,d)^2\,i^2\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{b^3\,g}+\frac{B^2\,(b\,c-a\,d)^2\,i^2\,n^2\,\text{Log}[c+d\,x]}{b^3\,g}+$$
$$\frac{B\,(b\,c-a\,d)^2\,i^2\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}-$$
$$\frac{(b\,c-a\,d)^2\,i^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}+$$
$$\frac{2\,B^2\,(b\,c-a\,d)^2\,i^2\,n^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^3\,g}-\frac{B^2\,(b\,c-a\,d)^2\,i^2\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}+$$
$$\frac{2\,B\,(b\,c-a\,d)^2\,i^2\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}+$$
$$\frac{2\,B^2\,(b\,c-a\,d)^2\,i^2\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}$$

Result (type 4, 1790 leaves, 82 steps):

$$-\frac{A B d (b c-a d) i^2 n x}{b^2 g}-\frac{a B^2 d (b c-a d) i^2 n^2 \text{Log}[a+b x]^2}{b^3 g}+$$

$$\frac{B^2 (b c-a d)^2 i^2 n^2 \text{Log}[a+b x]^2}{2 b^3 g}-\frac{A B (b c-a d)^2 i^2 n \text{Log}[g (a+b x)]^2}{b^3 g}+$$

$$\frac{B^2 (b c-a d)^2 i^2 n^2 \text{Log}[g (a+b x)]^3}{3 b^3 g}-\frac{B^2 (b c-a d)^2 i^2 n^2 \text{Log}[g (a+b x)]^2 \text{Log}[-c-d x]}{b^3 g}+$$

$$\frac{2 B^2 (b c-a d)^2 i^2 n \text{Log}[g (a+b x)] \text{Log}[(a+b x)^n] \text{Log}[-c-d x]}{b^3 g}-$$

$$\frac{B^2 (b c-a d)^2 i^2 \text{Log}[(a+b x)^n]^2 \text{Log}[-c-d x]}{b^3 g}-\frac{B^2 d (b c-a d) i^2 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{b^3 g}+$$

$$\frac{2 a B d (b c-a d) i^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g}-$$

$$\frac{B (b c-a d)^2 i^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g}+$$

$$\frac{d (b c-a d) i^2 x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^2 g}+\frac{i^2 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b g}+$$

$$\frac{B^2 (b c-a d)^2 i^2 n^2 \text{Log}[c+d x]}{b^3 g}+\frac{2 B^2 c (b c-a d) i^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^2 g}-$$

$$\frac{2 B c (b c-a d) i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{b^2 g}-$$

$$\frac{B^2 c (b c-a d) i^2 n^2 \text{Log}[c+d x]^2}{b^2 g}+\frac{2 a B^2 d (b c-a d) i^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}-$$

$$\frac{B^2 (b c-a d)^2 i^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}+\frac{B^2 (b c-a d)^2 i^2 n^2 \text{Log}[g (a+b x)]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}+$$

$$\frac{B^2 (b c-a d)^2 i^2 \text{Log}[(a+b x)^n]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}+\frac{B^2 (b c-a d)^2 i^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^{-n}\right]^2}{b^3 g}-$$

$$\frac{B^2 (b c-a d)^2 i^2 \text{Log}[g (a+b x)] \text{Log}\left[(c+d x)^{-n}\right]^2}{b^3 g}+$$

$$\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}[a g+b g x]}{b^3 g}+$$

$$\frac{2 A B (b c-a d)^2 i^2 n \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}[a g+b g x]}{b^3 g}-\frac{1}{b^3 g}$$

$$2 B^2 (b c-a d)^2 i^2 n \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \left(\text{Log}[(a+b x)^n]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right)$$

$$\text{Log}[a g+b g x]-\frac{B^2 (b c-a d)^2 i^2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[a g+b g x]^2}{b^3 g}-$$

$$\frac{B^2 (b c-a d)^2 i^2 n^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}[a g+b g x]^2}{b^3 g}+\frac{2 A B (b c-a d)^2 i^2 n \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g}+$$

$$\frac{2 a B^2 d (b c-a d) i^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g}-\frac{B^2 (b c-a d)^2 i^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g}+$$

$$\frac{2 B^2 (b c-a d)^2 i^2 n \text{Log}\left[(a+b x)^n\right] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g}-\frac{1}{b^3 g}$$

$$2 B^2 (b c-a d)^2 i^2 n \left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right)$$

$$\text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]+\frac{2 B^2 c (b c-a d) i^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^2 g}-$$

$$\frac{2 B^2 (b c-a d)^2 i^2 n \text{Log}\left[(c+d x)^{-n}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}-$$

$$\frac{2 B^2 (b c-a d)^2 i^2 n^2 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g}-\frac{2 B^2 (b c-a d)^2 i^2 n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{b^3 g}$$

Problem 173: Result valid but suboptimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^2} \, dx$$

Optimal (type 4, 472 leaves, 11 steps):

$$-\frac{2 B^2 (b c-a d) i^2 n^2 (c+d x)}{b^2 g^2 (a+b x)}-\frac{2 B (b c-a d) i^2 n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^2 g^2 (a+b x)}+$$

$$\frac{d^2 i^2 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^2}-\frac{(b c-a d) i^2 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^2 g^2 (a+b x)}+$$

$$\frac{2 B d (b c-a d) i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b^3 g^2}-$$

$$\frac{2 d (b c-a d) i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^2}+$$

$$\frac{2 B^2 d (b c-a d) i^2 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^3 g^2}+$$

$$\frac{4 B d (b c-a d) i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^2}+$$

$$\frac{4 B^2 d (b c-a d) i^2 n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^2}$$

Result (type 4, 1309 leaves, 60 steps):

$$-\frac{2 B^2 (b c-a d)^2 i^2 n^2}{b^3 g^2 (a+b x)}-\frac{2 B^2 d (b c-a d) i^2 n^2 \text{Log}[a+b x]}{b^3 g^2}-$$

$$\frac{2 A B d (b c-a d) i^2 n \text{Log}[a+b x]^2}{b^3 g^2}-\frac{a B^2 d^2 i^2 n^2 \text{Log}[a+b x]^2}{b^3 g^2}+$$

$$\frac{B^2 d (b c-a d) i^2 n^2 \text{Log}[a+b x]^2}{b^3 g^2}-\frac{2 B^2 d (b c-a d) i^2 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^3 g^2}-$$

$$\frac{2 B^2 d (b c-a d) i^2 \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^3 g^2}-$$

$$\frac{2 B (b c-a d)^2 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^2 (a+b x)}+\frac{2 a B d^2 i^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^2}-$$

$$\frac{2 B d (b c-a d) i^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^2}+\frac{d^2 i^2 x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^2 g^2}-$$

$$\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^2 (a+b x)}+\frac{2 d (b c-a d) i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^2}+$$

$$\frac{2 B^2 d (b c-a d) i^2 n^2 \text{Log}[c+d x]}{b^3 g^2}+\frac{2 B^2 c d i^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^2 g^2}-$$

$$\frac{2 B^2 d (b c-a d) i^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^3 g^2}-\frac{2 B c d i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{b^2 g^2}+$$

$$\frac{2 B d (b c-a d) i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{b^3 g^2}-$$

$$\frac{B^2 c d i^2 n^2 \text{Log}[c+d x]^2}{b^2 g^2}+\frac{B^2 d (b c-a d) i^2 n^2 \text{Log}[c+d x]^2}{b^3 g^2}+$$

$$\frac{4 A B d (b c-a d) i^2 n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^2}+\frac{2 a B^2 d^2 i^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^2}-$$

$$\frac{2 B^2 d (b c-a d) i^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^2}+\frac{4 A B d (b c-a d) i^2 n \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g^2}+$$

$$\frac{2 a B^2 d^2 i^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g^2}-\frac{2 B^2 d (b c-a d) i^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g^2}+$$

$$\frac{2 B^2 c d i^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^2 g^2}-\frac{2 B^2 d (b c-a d) i^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^2}+$$

$$\frac{4 B^2 d (b c-a d) i^2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{b^3 g^2}+$$

$$\frac{4 B^2 d (b c-a d) i^2 n^2 \text{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{b^3 g^2}$$

Problem 174: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^2 \left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 4, 417 leaves, 10 steps):

$$-\frac{2\,B^2\,d\,i^2\,n^2\,(c+d\,x)}{b^2\,g^3\,(a+b\,x)}-\frac{B^2\,i^2\,n^2\,(c+d\,x)^2}{4\,b\,g^3\,(a+b\,x)^2}-\frac{2\,B\,d\,i^2\,n\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,g^3\,(a+b\,x)}-$$
$$\frac{B\,i^2\,n\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b\,g^3\,(a+b\,x)^2}-\frac{d\,i^2\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{b^2\,g^3\,(a+b\,x)}-$$
$$\frac{i^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,b\,g^3\,(a+b\,x)^2}-\frac{d^2\,i^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}+$$
$$\frac{2\,B\,d^2\,i^2\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}+\frac{2\,B^2\,d^2\,i^2\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}$$

Result (type 4, 1003 leaves, 68 steps):

$$-\frac{B^2 (b c-a d)^2 i^2 n^2}{4 b^3 g^3 (a+b x)^2}-\frac{5 B^2 d (b c-a d) i^2 n^2}{2 b^3 g^3 (a+b x)}-\frac{5 B^2 d^2 i^2 n^2 \text{Log}[a+b x]}{2 b^3 g^3}-$$

$$\frac{A B d^2 i^2 n \text{Log}[a+b x]^2}{b^3 g^3}+\frac{3 B^2 d^2 i^2 n^2 \text{Log}[a+b x]^2}{2 b^3 g^3}-\frac{B^2 d^2 i^2 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^3 g^3}-$$

$$\frac{B^2 d^2 i^2 \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^3 g^3}-\frac{B (b c-a d)^2 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^3 g^3 (a+b x)^2}-$$

$$\frac{3 B d (b c-a d) i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^3 (a+b x)}-\frac{3 B d^2 i^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^3}-$$

$$\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^3 g^3 (a+b x)^2}-\frac{2 d (b c-a d) i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^3 (a+b x)}+$$

$$\frac{d^2 i^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^3}+\frac{5 B^2 d^2 i^2 n^2 \text{Log}[c+d x]}{2 b^3 g^3}-$$

$$\frac{3 B^2 d^2 i^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^3 g^3}+\frac{3 B d^2 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{b^3 g^3}+$$

$$\frac{3 B^2 d^2 i^2 n^2 \text{Log}[c+d x]^2}{2 b^3 g^3}+\frac{2 A B d^2 i^2 n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^3}-$$

$$\frac{3 B^2 d^2 i^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^3}+\frac{2 A B d^2 i^2 n \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g^3}-$$

$$\frac{3 B^2 d^2 i^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^3 g^3}-\frac{3 B^2 d^2 i^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^3 g^3}+$$

$$\frac{2 B^2 d^2 i^2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{b^3 g^3}+\frac{2 B^2 d^2 i^2 n^2 \text{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{b^3 g^3}$$

Problem 175: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^4} \, dx$$

Optimal (type 3, 157 leaves, 3 steps):

$$-\frac{2 B^2 i^2 n^2 (c+d x)^3}{27 (b c-a d) g^4 (a+b x)^3}-$$

$$\frac{2 B i^2 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d) g^4 (a+b x)^3}-\frac{i^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d) g^4 (a+b x)^3}$$

Result (type 4, 889 leaves, 86 steps):

$$-\frac{2 B^2 (b c-a d)^2 i^2 n^2}{27 b^3 g^4 (a+b x)^3}-\frac{2 B^2 d (b c-a d) i^2 n^2}{9 b^3 g^4 (a+b x)^2}-\frac{2 B^2 d^2 i^2 n^2}{9 b^3 g^4 (a+b x)}-\frac{2 B^2 d^3 i^2 n^2 \text{Log}[a+b x]}{9 b^3 (b c-a d) g^4}+\frac{B^2 d^3 i^2 n^2 \text{Log}[a+b x]^2}{3 b^3 (b c-a d) g^4}-\frac{2 B (b c-a d)^2 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 b^3 g^4 (a+b x)^3}-\frac{2 B d (b c-a d) i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^3 g^4 (a+b x)^2}-\frac{2 B d^2 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^3 g^4 (a+b x)}-\frac{2 B d^3 i^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^3 (b c-a d) g^4}-\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b^3 g^4 (a+b x)^3}-\frac{d (b c-a d) i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^4 (a+b x)^2}-\frac{d^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^4 (a+b x)}+\frac{2 B^2 d^3 i^2 n^2 \text{Log}[c+d x]}{9 b^3 (b c-a d) g^4}-\frac{2 B^2 d^3 i^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 b^3 (b c-a d) g^4}+\frac{2 B d^3 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{3 b^3 (b c-a d) g^4}+\frac{B^2 d^3 i^2 n^2 \text{Log}[c+d x]^2}{3 b^3 (b c-a d) g^4}-\frac{2 B^2 d^3 i^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b^3 (b c-a d) g^4}-\frac{2 B^2 d^3 i^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 b^3 (b c-a d) g^4}-\frac{2 B^2 d^3 i^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 b^3 (b c-a d) g^4}$$

Problem 176: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^5} \, dx$$

Optimal (type 3, 319 leaves, 7 steps):

$$\frac{2 B^2 d i^2 n^2 (c+d x)^3}{27 (b c-a d)^2 g^5 (a+b x)^3}-\frac{b B^2 i^2 n^2 (c+d x)^4}{32 (b c-a d)^2 g^5 (a+b x)^4}+\frac{2 B d i^2 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^2 g^5 (a+b x)^3}-\frac{b B i^2 n (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{8 (b c-a d)^2 g^5 (a+b x)^4}+\frac{d i^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d)^2 g^5 (a+b x)^3}-\frac{b i^2 (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 (b c-a d)^2 g^5 (a+b x)^4}$$

Result (type 4, 989 leaves, 98 steps):

$$-\frac{B^2 (b c-a d)^2 i^2 n^2}{32 b^3 g^5 (a+b x)^4}-\frac{11 B^2 d (b c-a d) i^2 n^2}{216 b^3 g^5 (a+b x)^3}+\frac{5 B^2 d^2 i^2 n^2}{144 b^3 g^5 (a+b x)^2}+$$
$$\frac{7 B^2 d^3 i^2 n^2}{72 b^3 (b c-a d) g^5 (a+b x)}+\frac{7 B^2 d^4 i^2 n^2 \text{Log}[a+b x]}{72 b^3 (b c-a d)^2 g^5}-\frac{B^2 d^4 i^2 n^2 \text{Log}[a+b x]^2}{12 b^3 (b c-a d)^2 g^5}-$$
$$\frac{B (b c-a d)^2 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{8 b^3 g^5 (a+b x)^4}-\frac{5 B d (b c-a d) i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{18 b^3 g^5 (a+b x)^3}-$$
$$\frac{B d^2 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{12 b^3 g^5 (a+b x)^2}+\frac{B d^3 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b^3 (b c-a d) g^5 (a+b x)}+$$
$$\frac{B d^4 i^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b^3 (b c-a d)^2 g^5}-\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 b^3 g^5 (a+b x)^4}-$$
$$\frac{2 d (b c-a d) i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b^3 g^5 (a+b x)^3}-\frac{d^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^3 g^5 (a+b x)^2}-\frac{7 B^2 d^4 i^2 n^2 \text{Log}[c+d x]}{72 b^3 (b c-a d)^2 g^5}+$$
$$\frac{B^2 d^4 i^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{6 b^3 (b c-a d)^2 g^5}-\frac{B d^4 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{6 b^3 (b c-a d)^2 g^5}-$$
$$\frac{B^2 d^4 i^2 n^2 \text{Log}[c+d x]^2}{12 b^3 (b c-a d)^2 g^5}+\frac{B^2 d^4 i^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{6 b^3 (b c-a d)^2 g^5}+$$
$$\frac{B^2 d^4 i^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{6 b^3 (b c-a d)^2 g^5}+\frac{B^2 d^4 i^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{6 b^3 (b c-a d)^2 g^5}$$

Problem 177: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^6} \, dx$$

Optimal (type 3, 493 leaves, 9 steps):

$$-\frac{2 B^2 d^2 i^2 n^2 (c+d x)^3}{27 (b c-a d)^3 g^6 (a+b x)^3}+\frac{b B^2 d i^2 n^2 (c+d x)^4}{16 (b c-a d)^3 g^6 (a+b x)^4}-\frac{2 b^2 B^2 i^2 n^2 (c+d x)^5}{125 (b c-a d)^3 g^6 (a+b x)^5}-\frac{2 B d^2 i^2 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^3 g^6 (a+b x)^3}+\frac{b B d i^2 n (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 (b c-a d)^3 g^6 (a+b x)^4}-\frac{2 b^2 B i^2 n (c+d x)^5 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{25 (b c-a d)^3 g^6 (a+b x)^5}-\frac{d^2 i^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d)^3 g^6 (a+b x)^3}+\frac{b d i^2 (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^3 g^6 (a+b x)^4}-\frac{b^2 i^2 (c+d x)^5 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 (b c-a d)^3 g^6 (a+b x)^5}$$

Result (type 4, 1085 leaves, 110 steps):

$$-\frac{2 B^2 (b c-a d)^2 i^2 n^2}{125 b^3 g^6 (a+b x)^5}-\frac{7 B^2 d (b c-a d) i^2 n^2}{400 b^3 g^6 (a+b x)^4}+\frac{43 B^2 d^2 i^2 n^2}{2700 b^3 g^6 (a+b x)^3}-\frac{13 B^2 d^3 i^2 n^2}{1800 b^3 (b c-a d) g^6 (a+b x)^2}-\frac{47 B^2 d^4 i^2 n^2}{900 b^3 (b c-a d)^2 g^6 (a+b x)}-\frac{47 B^2 d^5 i^2 n^2 \text{Log}[a+b x]}{900 b^3 (b c-a d)^3 g^6}+\frac{B^2 d^5 i^2 n^2 \text{Log}[a+b x]^2}{30 b^3 (b c-a d)^3 g^6}-\frac{2 B (b c-a d)^2 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{25 b^3 g^6 (a+b x)^5}-\frac{3 B d (b c-a d) i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{20 b^3 g^6 (a+b x)^4}-\frac{B d^2 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{45 b^3 g^6 (a+b x)^3}+\frac{B d^3 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b^3 (b c-a d) g^6 (a+b x)^2}-\frac{B d^4 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{15 b^3 (b c-a d)^2 g^6 (a+b x)}-\frac{B d^5 i^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{15 b^3 (b c-a d)^3 g^6}-\frac{(b c-a d)^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 b^3 g^6 (a+b x)^5}-\frac{d (b c-a d) i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^3 g^6 (a+b x)^4}-\frac{d^2 i^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b^3 g^6 (a+b x)^3}+\frac{47 B^2 d^5 i^2 n^2 \text{Log}[c+d x]}{900 b^3 (b c-a d)^3 g^6}-\frac{B^2 d^5 i^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{15 b^3 (b c-a d)^3 g^6}+\frac{B d^5 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{15 b^3 (b c-a d)^3 g^6}+\frac{B^2 d^5 i^2 n^2 \text{Log}[c+d x]^2}{30 b^3 (b c-a d)^3 g^6}-\frac{B^2 d^5 i^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{15 b^3 (b c-a d)^3 g^6}-\frac{B^2 d^5 i^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{15 b^3 (b c-a d)^3 g^6}-\frac{B^2 d^5 i^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{15 b^3 (b c-a d)^3 g^6}$$

Problem 178: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^3 (c i+d i x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 1172 leaves, 22 steps):

$$\frac{5 B^2 (b c-a d)^6 g^3 i^3 n^2 x}{84 b^3 d^3}+\frac{B^2 (b c-a d)^3 g^3 i^3 n^2 (a+b x)^4}{140 b^4}-\frac{29 B^2 (b c-a d)^5 g^3 i^3 n^2 (c+d x)^2}{840 b^2 d^4}+$$
$$\frac{47 B^2 (b c-a d)^4 g^3 i^3 n^2 (c+d x)^3}{1260 b d^4}-\frac{13 B^2 (b c-a d)^3 g^3 i^3 n^2 (c+d x)^4}{420 d^4}+$$
$$\frac{b B^2 (b c-a d)^2 g^3 i^3 n^2 (c+d x)^5}{105 d^4}-\frac{B (b c-a d)^4 g^3 i^3 n (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{210 b^4 d}-$$
$$\frac{3 B (b c-a d)^3 g^3 i^3 n (a+b x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{140 b^4}-$$
$$\frac{B (b c-a d)^2 g^3 i^3 n (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{35 b^3}+$$
$$\frac{2 B (b c-a d)^4 g^3 i^3 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{21 b d^4}-$$
$$\frac{3 B (b c-a d)^3 g^3 i^3 n (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{14 d^4}+$$
$$\frac{6 b B (b c-a d)^2 g^3 i^3 n (c+d x)^5 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{35 d^4}-$$
$$\frac{b^2 B (b c-a d) g^3 i^3 n (c+d x)^6 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{21 d^4}+$$
$$\frac{(b c-a d)^3 g^3 i^3 (a+b x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{140 b^4}+$$
$$\frac{(b c-a d)^2 g^3 i^3 (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{35 b^3}+$$
$$\frac{(b c-a d) g^3 i^3 (a+b x)^4 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{14 b^2}+$$
$$\frac{g^3 i^3 (a+b x)^4 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{7 b}+$$
$$\frac{B (b c-a d)^5 g^3 i^3 n (a+b x)^2 \left(3 A+B n+3 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{420 b^4 d^2}-$$
$$\frac{B (b c-a d)^6 g^3 i^3 n (a+b x) \left(6 A+5 B n+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{420 b^4 d^3}-$$

$$\frac{B\,(b\,c-a\,d)^7\,g^3\,i^3\,n\,\left(6\,A+11\,B\,n+6\,B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{420\,b^4\,d^4}-$$
$$\frac{B^2\,(b\,c-a\,d)^7\,g^3\,i^3\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{210\,b^4\,d^4}-\frac{11\,B^2\,(b\,c-a\,d)^7\,g^3\,i^3\,n^2\,\text{Log}[c+d\,x]}{420\,b^4\,d^4}-$$
$$\frac{B^2\,(b\,c-a\,d)^7\,g^3\,i^3\,n^2\,\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{70\,b^4\,d^4}$$

Result (type 4, 961 leaves, 118 steps):

$$-\frac{A\,B\,(b\,c-a\,d)^6\,g^3\,i^3\,n\,x}{70\,b^3\,d^3}+\frac{B^2\,(b\,c-a\,d)^6\,g^3\,i^3\,n^2\,x}{70\,b^3\,d^3}-\frac{3\,B^2\,(b\,c-a\,d)^5\,g^3\,i^3\,n^2\,(a+b\,x)^2}{280\,b^4\,d^2}+$$
$$\frac{11\,B^2\,(b\,c-a\,d)^4\,g^3\,i^3\,n^2\,(a+b\,x)^3}{1260\,b^4\,d}+\frac{B^2\,(b\,c-a\,d)^3\,g^3\,i^3\,n^2\,(a+b\,x)^4}{42\,b^4}+$$
$$\frac{B^2\,d\,(b\,c-a\,d)^2\,g^3\,i^3\,n^2\,(a+b\,x)^5}{105\,b^4}-\frac{B^2\,(b\,c-a\,d)^6\,g^3\,i^3\,n\,(a+b\,x)\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{70\,b^4\,d^3}+$$
$$\frac{B\,(b\,c-a\,d)^5\,g^3\,i^3\,n\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{140\,b^4\,d^2}-$$
$$\frac{B\,(b\,c-a\,d)^4\,g^3\,i^3\,n\,(a+b\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{210\,b^4\,d}-$$
$$\frac{17\,B\,(b\,c-a\,d)^3\,g^3\,i^3\,n\,(a+b\,x)^4\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{140\,b^4}-$$
$$\frac{B\,d\,(b\,c-a\,d)^2\,g^3\,i^3\,n\,(a+b\,x)^5\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{7\,b^4}-$$
$$\frac{B\,d^2\,(b\,c-a\,d)\,g^3\,i^3\,n\,(a+b\,x)^6\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{21\,b^4}+$$
$$\frac{(b\,c-a\,d)^3\,g^3\,i^3\,(a+b\,x)^4\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{4\,b^4}+$$
$$\frac{3\,d\,(b\,c-a\,d)^2\,g^3\,i^3\,(a+b\,x)^5\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{5\,b^4}+$$
$$\frac{d^2\,(b\,c-a\,d)\,g^3\,i^3\,(a+b\,x)^6\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,b^4}+$$
$$\frac{d^3\,g^3\,i^3\,(a+b\,x)^7\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{7\,b^4}-\frac{B^2\,(b\,c-a\,d)^7\,g^3\,i^3\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{70\,b^4\,d^4}+$$
$$\frac{B\,(b\,c-a\,d)^7\,g^3\,i^3\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{70\,b^4\,d^4}+$$
$$\frac{B^2\,(b\,c-a\,d)^7\,g^3\,i^3\,n^2\,\text{Log}[c+d\,x]^2}{140\,b^4\,d^4}-\frac{B^2\,(b\,c-a\,d)^7\,g^3\,i^3\,n^2\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{70\,b^4\,d^4}$$

Problem 179: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^2 (c i+d i x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \, dx$$

Optimal (type 4, 976 leaves, 20 steps):

$$-\frac{7 B^2 (b c-a d)^5 g^2 i^3 n^2 x}{180 b^3 d^2}-\frac{7 B^2 (b c-a d)^4 g^2 i^3 n^2 (c+d x)^2}{360 b^2 d^3}-\frac{B^2 (b c-a d)^3 g^2 i^3 n^2 (c+d x)^3}{60 b d^3}+$$
$$\frac{B^2 (b c-a d)^2 g^2 i^3 n^2 (c+d x)^4}{60 d^3}-\frac{B (b c-a d)^4 g^2 i^3 n (a+b x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{60 b^4 d}-$$
$$\frac{B (b c-a d)^3 g^2 i^3 n (a+b x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b^4}-$$
$$\frac{B (b c-a d)^4 g^2 i^3 n (c+d x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 b^2 d^3}+$$
$$\frac{B (b c-a d)^3 g^2 i^3 n (c+d x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{45 b d^3}+$$
$$\frac{7 B (b c-a d)^2 g^2 i^3 n (c+d x)^4 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{60 d^3}-$$
$$\frac{b B (b c-a d) g^2 i^3 n (c+d x)^5 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{15 d^3}+$$
$$\frac{(b c-a d)^3 g^2 i^3 (a+b x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{60 b^4}+$$
$$\frac{(b c-a d)^2 g^2 i^3 (a+b x)^3 (c+d x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{20 b^3}+$$
$$\frac{(b c-a d) g^2 i^3 (a+b x)^3 (c+d x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{10 b^2}+$$
$$\frac{g^2 i^3 (a+b x)^3 (c+d x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{6 b}+$$
$$\frac{B (b c-a d)^5 g^2 i^3 n (a+b x) \left(2 A+B n+2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{60 b^4 d^2}+$$
$$\frac{B (b c-a d)^6 g^2 i^3 n \left(2 A+3 B n+2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{60 b^4 d^3}+$$
$$\frac{B^2 (b c-a d)^6 g^2 i^3 n^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{36 b^4 d^3}+\frac{11 B^2 (b c-a d)^6 g^2 i^3 n^2 \operatorname{Log}[c+d x]}{180 b^4 d^3}+$$
$$\frac{B^2 (b c-a d)^6 g^2 i^3 n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{30 b^4 d^3}$$

Result (type 4, 886 leaves, 83 steps):

$$-\frac{A B (b c-a d)^5 g^2 i^3 n x}{30 b^3 d^2}-\frac{B^2 (b c-a d)^5 g^2 i^3 n^2 x}{45 b^3 d^2}-\frac{7 B^2 (b c-a d)^4 g^2 i^3 n^2 (c+d x)^2}{360 b^2 d^3}-\frac{B^2 (b c-a d)^3 g^2 i^3 n^2 (c+d x)^3}{60 b d^3}+\frac{B^2 (b c-a d)^2 g^2 i^3 n^2 (c+d x)^4}{60 d^3}-\frac{B^2 (b c-a d)^6 g^2 i^3 n^2 \text{Log}[a+b x]}{45 b^4 d^3}+\frac{B^2 (b c-a d)^6 g^2 i^3 n^2 \text{Log}[a+b x]^2}{60 b^4 d^3}-\frac{B^2 (b c-a d)^5 g^2 i^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{30 b^4 d^2}-\frac{B (b c-a d)^4 g^2 i^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{60 b^2 d^3}-\frac{B (b c-a d)^3 g^2 i^3 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{90 b d^3}+\frac{7 B (b c-a d)^2 g^2 i^3 n (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{60 d^3}-\frac{b B (b c-a d) g^2 i^3 n (c+d x)^5 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{15 d^3}-\frac{B (b c-a d)^6 g^2 i^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b^4 d^3}+\frac{(b c-a d)^2 g^2 i^3 (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 d^3}-\frac{2 b (b c-a d) g^2 i^3 (c+d x)^5 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 d^3}+\frac{b^2 g^2 i^3 (c+d x)^6 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{6 d^3}+\frac{B^2 (b c-a d)^6 g^2 i^3 n^2 \text{Log}[c+d x]}{30 b^4 d^3}-\frac{B^2 (b c-a d)^6 g^2 i^3 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{30 b^4 d^3}-\frac{B^2 (b c-a d)^6 g^2 i^3 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{30 b^4 d^3}$$

Problem 180: Result valid but suboptimal antiderivative.

$$\int (a g+b g x) (c i+d i x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 786 leaves, 19 steps):

$$\frac{B^2 (b c-a d)^4 g i^3 n^2 x}{60 b^3 d}+\frac{B^2 (b c-a d)^3 g i^3 n^2 (c+d x)^2}{30 b^2 d^2}+$$

$$\frac{B^2 (b c-a d)^2 g i^3 n^2 (c+d x)^3}{30 b d^2}-\frac{B (b c-a d)^4 g i^3 n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 b^4 d}-$$

$$\frac{B (b c-a d)^3 g i^3 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 b^4}+$$

$$\frac{3 B (b c-a d)^3 g i^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{20 b^2 d^2}+$$

$$\frac{B (b c-a d)^2 g i^3 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b d^2}-$$

$$\frac{B (b c-a d) g i^3 n (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 d^2}+$$

$$\frac{(b c-a d)^3 g i^3 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{20 b^4}+$$

$$\frac{(b c-a d)^2 g i^3 (a+b x)^2 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{10 b^3}+$$

$$\frac{3 (b c-a d) g i^3 (a+b x)^2 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{20 b^2}+$$

$$\frac{g i^3 (a+b x)^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 b}-$$

$$\frac{B (b c-a d)^5 g i^3 n \left(A+B n+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{10 b^4 d^2}-\frac{B^2 (b c-a d)^5 g i^3 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^4 d^2}-$$

$$\frac{11 B^2 (b c-a d)^5 g i^3 n^2 \text{Log}[c+d x]}{60 b^4 d^2}-\frac{B^2 (b c-a d)^5 g i^3 n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{10 b^4 d^2}$$

Result (type 4, 706 leaves, 52 steps) :

$$\frac{A B (b c-a d)^4 g i^3 n x}{10 b^3 d}+\frac{B^2 (b c-a d)^4 g i^3 n^2 x}{60 b^3 d}+\frac{B^2 (b c-a d)^3 g i^3 n^2 (c+d x)^2}{30 b^2 d^2}+$$
$$\frac{B^2 (b c-a d)^2 g i^3 n^2 (c+d x)^3}{30 b d^2}+\frac{B^2 (b c-a d)^5 g i^3 n^2 \text{Log}[a+b x]}{60 b^4 d^2}-$$
$$\frac{B^2 (b c-a d)^5 g i^3 n^2 \text{Log}[a+b x]^2}{20 b^4 d^2}+\frac{B^2 (b c-a d)^4 g i^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{10 b^4 d}+$$
$$\frac{B (b c-a d)^3 g i^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{20 b^2 d^2}+$$
$$\frac{B (b c-a d)^2 g i^3 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b d^2}-$$
$$\frac{B (b c-a d) g i^3 n (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 d^2}+$$
$$\frac{B (b c-a d)^5 g i^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 b^4 d^2}-$$
$$\frac{(b c-a d) g i^3 (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 d^2}+$$
$$\frac{b g i^3 (c+d x)^5 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 d^2}-\frac{B^2 (b c-a d)^5 g i^3 n^2 \text{Log}[c+d x]}{10 b^4 d^2}+$$
$$\frac{B^2 (b c-a d)^5 g i^3 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{10 b^4 d^2}+\frac{B^2 (b c-a d)^5 g i^3 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{10 b^4 d^2}$$

Problem 181: Result valid but suboptimal antiderivative.

$$\int (c i+d i x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \, dx$$

Optimal (type 4, 454 leaves, 15 steps):

$$\frac{5 B^2 (b c - a d)^3 i^3 n^2 x}{12 b^3} + \frac{B^2 (b c - a d)^2 i^3 n^2 (c + d x)^2}{12 b^2 d} -$$
$$\frac{B (b c - a d)^3 i^3 n (a + b x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^4} -$$
$$\frac{B (b c - a d)^2 i^3 n (c + d x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 b^2 d} -$$
$$\frac{B (b c - a d) i^3 n (c + d x)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b d} + \frac{i^3 (c + d x)^4 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 d} +$$
$$\frac{5 B^2 (b c - a d)^4 i^3 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^4 d} + \frac{11 B^2 (b c - a d)^4 i^3 n^2 \text{Log}[c + d x]}{12 b^4 d} +$$
$$\frac{B (b c - a d)^4 i^3 n \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{2 b^4 d} - \frac{B^2 (b c - a d)^4 i^3 n^2 \text{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{2 b^4 d}$$

Result (type 4, 544 leaves, 23 steps):

$$-\frac{A B (b c - a d)^3 i^3 n x}{2 b^3} + \frac{5 B^2 (b c - a d)^3 i^3 n^2 x}{12 b^3} + \frac{B^2 (b c - a d)^2 i^3 n^2 (c + d x)^2}{12 b^2 d} +$$
$$\frac{5 B^2 (b c - a d)^4 i^3 n^2 \text{Log}[a + b x]}{12 b^4 d} + \frac{B^2 (b c - a d)^4 i^3 n^2 \text{Log}[a + b x]^2}{4 b^4 d} -$$
$$\frac{B^2 (b c - a d)^3 i^3 n (a + b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{2 b^4} - \frac{B (b c - a d)^2 i^3 n (c + d x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 b^2 d} -$$
$$\frac{B (b c - a d) i^3 n (c + d x)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b d} -$$
$$\frac{B (b c - a d)^4 i^3 n \text{Log}[a + b x] \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^4 d} +$$
$$\frac{i^3 (c + d x)^4 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 d} + \frac{B^2 (b c - a d)^4 i^3 n^2 \text{Log}[c + d x]}{2 b^4 d} -$$
$$\frac{B^2 (b c - a d)^4 i^3 n^2 \text{Log}[a + b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{2 b^4 d} - \frac{B^2 (b c - a d)^4 i^3 n^2 \text{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{2 b^4 d}$$

Problem 182: Result valid but suboptimal antiderivative.

$$\int \frac{(c i + d i x)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{a g + b g x} \, dx$$

Optimal (type 4, 762 leaves, 26 steps):

$$\frac{B^2 d (b c - a d)^2 i^3 n^2 x}{3 b^3 g} - \frac{5 B d (b c - a d)^2 i^3 n (a + b x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^4 g} -$$

$$\frac{B (b c - a d) i^3 n (c + d x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^2 g} +$$

$$\frac{d (b c - a d)^2 i^3 (a + b x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^4 g} + \frac{(b c - a d) i^3 (c + d x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^2 g} +$$

$$\frac{i^3 (c + d x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b g} + \frac{2 B (b c - a d)^3 i^3 n \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b^4 g} +$$

$$\frac{B^2 (b c - a d)^3 i^3 n^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^4 g} + \frac{2 B^2 (b c - a d)^3 i^3 n^2 \operatorname{Log}[c + d x]}{b^4 g} +$$

$$\frac{5 B (b c - a d)^3 i^3 n \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{3 b^4 g} -$$

$$\frac{(b c - a d)^3 i^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \operatorname{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g} +$$

$$\frac{2 B^2 (b c - a d)^3 i^3 n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b^4 g} - \frac{5 B^2 (b c - a d)^3 i^3 n^2 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{3 b^4 g} +$$

$$\frac{2 B (b c - a d)^3 i^3 n \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g} +$$

$$\frac{2 B^2 (b c - a d)^3 i^3 n^2 \operatorname{PolyLog}\left[3, \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g}$$

Result (type 4, 1995 leaves, 101 steps) :

$$-\frac{5 A B d (b c - a d)^2 i^3 n x}{3 b^3 g} + \frac{B^2 d (b c - a d)^2 i^3 n^2 x}{3 b^3 g} +$$

$$\frac{B^2 (b c - a d)^3 i^3 n^2 \operatorname{Log}[a + b x]}{3 b^4 g} - \frac{a B^2 d (b c - a d)^2 i^3 n^2 \operatorname{Log}[a + b x]^2}{b^4 g} +$$

$$\frac{5 B^2 (b c - a d)^3 i^3 n^2 \operatorname{Log}[a + b x]^2}{6 b^4 g} - \frac{A B (b c - a d)^3 i^3 n \operatorname{Log}[g (a + b x)]^2}{b^4 g} +$$

$$\frac{B^2 (b c - a d)^3 i^3 n^2 \operatorname{Log}[g (a + b x)]^3}{3 b^4 g} - \frac{B^2 (b c - a d)^3 i^3 n^2 \operatorname{Log}[g (a + b x)]^2 \operatorname{Log}[-c - d x]}{b^4 g} +$$

$$\frac{2 B^2 (b c - a d)^3 i^3 n \operatorname{Log}[g (a + b x)] \operatorname{Log}\left[(a + b x)^n\right] \operatorname{Log}[-c - d x]}{b^4 g} -$$

$$\frac{B^2 (b c - a d)^3 i^3 \operatorname{Log}\left[(a + b x)^n\right]^2 \operatorname{Log}[-c - d x]}{b^4 g} - \frac{5 B^2 d (b c - a d)^2 i^3 n (a + b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{3 b^4 g} -$$

$$\frac{B (b c - a d) i^3 n (c + d x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^2 g} +$$

$$\frac{2\,a\,B\,d\,(b\,c-a\,d)^2\,i^3\,n\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^4\,g}-$$

$$\frac{5\,B\,(b\,c-a\,d)^3\,i^3\,n\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b^4\,g}+\frac{d\,(b\,c-a\,d)^2\,i^3\,x\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{b^3\,g}+$$

$$\frac{(b\,c-a\,d)\,i^3\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,b^2\,g}+\frac{i^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,b\,g}+$$

$$\frac{5\,B^2\,(b\,c-a\,d)^3\,i^3\,n^2\,\text{Log}[c+d\,x]}{3\,b^4\,g}+\frac{2\,B^2\,c\,(b\,c-a\,d)^2\,i^3\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{b^3\,g}-$$

$$\frac{2\,B\,c\,(b\,c-a\,d)^2\,i^3\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{b^3\,g}-$$

$$\frac{B^2\,c\,(b\,c-a\,d)^2\,i^3\,n^2\,\text{Log}[c+d\,x]^2}{b^3\,g}+\frac{2\,a\,B^2\,d\,(b\,c-a\,d)^2\,i^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g}-$$

$$\frac{5\,B^2\,(b\,c-a\,d)^3\,i^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b^4\,g}+$$

$$\frac{B^2\,(b\,c-a\,d)^3\,i^3\,n^2\,\text{Log}[g\,(a+b\,x)]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g}+$$

$$\frac{B^2\,(b\,c-a\,d)^3\,i^3\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g}+\frac{B^2\,(b\,c-a\,d)^3\,i^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{b^4\,g}-$$

$$\frac{B^2\,(b\,c-a\,d)^3\,i^3\,\text{Log}[g\,(a+b\,x)]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{b^4\,g}+$$

$$\frac{(b\,c-a\,d)^3\,i^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}[a\,g+b\,g\,x]}{b^4\,g}+$$

$$\frac{2\,A\,B\,(b\,c-a\,d)^3\,i^3\,n\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]}{b^4\,g}-\frac{1}{b^4\,g}$$

$$2\,B^2\,(b\,c-a\,d)^3\,i^3\,n\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)$$

$$\text{Log}[a\,g+b\,g\,x]-\frac{B^2\,(b\,c-a\,d)^3\,i^3\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b^4\,g}-$$

$$\frac{B^2\,(b\,c-a\,d)^3\,i^3\,n^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[a\,g+b\,g\,x]^2}{b^4\,g}+\frac{2\,A\,B\,(b\,c-a\,d)^3\,i^3\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g}+$$

$$\frac{2\,a\,B^2\,d\,(b\,c-a\,d)^2\,i^3\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g}-\frac{5\,B^2\,(b\,c-a\,d)^3\,i^3\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,b^4\,g}+$$

$$\frac{2\,B^2\,(b\,c-a\,d)^3\,i^3\,n\,\text{Log}\left[(a+b\,x)^n\right]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g}-\frac{1}{b^4\,g}$$

$$2 B^2 (b c - a d)^3 i^3 n \left(\text{Log}\left[(a + b x)^n\right] - \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] + \text{Log}\left[(c + d x)^{-n}\right]\right)$$
$$\text{PolyLog}\left[2, -\frac{d (a + b x)}{b c - a d}\right] + \frac{2 B^2 c (b c - a d)^2 i^3 n^2 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b^3 g} -$$
$$\frac{2 B^2 (b c - a d)^3 i^3 n \text{Log}\left[(c + d x)^{-n}\right] \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b^4 g} -$$
$$\frac{2 B^2 (b c - a d)^3 i^3 n^2 \text{PolyLog}\left[3, -\frac{d (a+b x)}{b c-a d}\right]}{b^4 g} - \frac{2 B^2 (b c - a d)^3 i^3 n^2 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{b^4 g}$$

Problem 183: Result valid but suboptimal antiderivative.

$$\int \frac{(c i + d i x)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g + b g x)^2} \, dx$$

Optimal (type 4, 739 leaves, 17 steps):

$$-\frac{2 B^2 (b c - a d)^2 i^3 n^2 (c + d x)}{b^3 g^2 (a + b x)} - \frac{B d^2 (b c - a d) i^3 n (a + b x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^4 g^2} -$$
$$\frac{2 B (b c - a d)^2 i^3 n (c + d x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^2 (a + b x)} +$$
$$\frac{2 d^2 (b c - a d) i^3 (a + b x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^4 g^2} -$$
$$\frac{(b c - a d)^2 i^3 (c + d x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^2 (a + b x)} + \frac{d i^3 (c + d x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^2 g^2} +$$
$$\frac{4 B d (b c - a d)^2 i^3 n \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b^4 g^2} + \frac{B^2 d (b c - a d)^2 i^3 n^2 \text{Log}[c + d x]}{b^4 g^2} +$$
$$\frac{B d (b c - a d)^2 i^3 n \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2} -$$
$$\frac{3 d (b c - a d)^2 i^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2} +$$
$$\frac{4 B^2 d (b c - a d)^2 i^3 n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b^4 g^2} - \frac{B^2 d (b c - a d)^2 i^3 n^2 \text{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2} +$$
$$\frac{6 B d (b c - a d)^2 i^3 n \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2} +$$
$$\frac{6 B^2 d (b c - a d)^2 i^3 n^2 \text{PolyLog}\left[3, \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2}$$

Result (type 4, 1875 leaves, 83 steps) :

$$-\frac{A B d^2 (b c-a d) i^3 n x}{b^3 g^2}-\frac{2 B^2 (b c-a d)^3 i^3 n^2}{b^4 g^2 (a+b x)}-\frac{2 B^2 d (b c-a d)^2 i^3 n^2 \text{Log}[a+b x]}{b^4 g^2}-$$

$$\frac{3 A B d (b c-a d)^2 i^3 n \text{Log}[a+b x]^2}{b^4 g^2}+\frac{a^2 B^2 d^3 i^3 n^2 \text{Log}[a+b x]^2}{2 b^4 g^2}-$$

$$\frac{a B^2 d^2 (3 b c-2 a d) i^3 n^2 \text{Log}[a+b x]^2}{b^4 g^2}+\frac{B^2 d (b c-a d)^2 i^3 n^2 \text{Log}[a+b x]^2}{b^4 g^2}-$$

$$\frac{B^2 d^2 (b c-a d) i^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{b^4 g^2}-\frac{3 B^2 d (b c-a d)^2 i^3 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^4 g^2}-$$

$$\frac{3 B^2 d (b c-a d)^2 i^3 \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^4 g^2}-$$

$$\frac{2 B (b c-a d)^3 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^4 g^2 (a+b x)}-\frac{a^2 B d^3 i^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^4 g^2}+$$

$$\frac{2 a B d^2 (3 b c-2 a d) i^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^4 g^2}-$$

$$\frac{2 B d (b c-a d)^2 i^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^4 g^2}+$$

$$\frac{d^2 (3 b c-2 a d) i^3 x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^2}+\frac{d^3 i^3 x^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^2 g^2}-$$

$$\frac{(b c-a d)^3 i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^4 g^2 (a+b x)}+\frac{3 d (b c-a d)^2 i^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^4 g^2}+$$

$$\frac{3 B^2 d (b c-a d)^2 i^3 n^2 \text{Log}[c+d x]}{b^4 g^2}-\frac{B^2 c^2 d i^3 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^2 g^2}+$$

$$\frac{2 B^2 c d (3 b c-2 a d) i^3 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^3 g^2}-$$

$$\frac{2 B^2 d (b c-a d)^2 i^3 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{b^4 g^2}+\frac{B c^2 d i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{b^2 g^2}-$$

$$\frac{2 B c d (3 b c-2 a d) i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{b^3 g^2}+$$

$$\frac{2 B d (b c-a d)^2 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{b^4 g^2}+\frac{B^2 c^2 d i^3 n^2 \text{Log}[c+d x]^2}{2 b^2 g^2}-$$

$$\frac{B^2 c d (3 b c-2 a d) i^3 n^2 \text{Log}[c+d x]^2}{b^3 g^2}+\frac{B^2 d (b c-a d)^2 i^3 n^2 \text{Log}[c+d x]^2}{b^4 g^2}+$$

$$\frac{6 A B d (b c-a d)^2 i^3 n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^4 g^2}-\frac{a^2 B^2 d^3 i^3 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^4 g^2}+$$

$$\frac{2\,a\,B^2\,d^2\,\left(3\,b\,c-2\,a\,d\right)\,i^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^2}-$$
$$\frac{2\,B^2\,d\,\left(b\,c-a\,d\right)^2\,i^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^2}+\frac{6\,A\,B\,d\,\left(b\,c-a\,d\right)^2\,i^3\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^2}-$$
$$\frac{a^2\,B^2\,d^3\,i^3\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^2}+\frac{2\,a\,B^2\,d^2\,\left(3\,b\,c-2\,a\,d\right)\,i^3\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^2}-$$
$$\frac{2\,B^2\,d\,\left(b\,c-a\,d\right)^2\,i^3\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^2}-\frac{B^2\,c^2\,d\,i^3\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2\,g^2}+$$
$$\frac{2\,B^2\,c\,d\,\left(3\,b\,c-2\,a\,d\right)\,i^3\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^3\,g^2}-\frac{2\,B^2\,d\,\left(b\,c-a\,d\right)^2\,i^3\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^2}+$$
$$\frac{6\,B^2\,d\,\left(b\,c-a\,d\right)^2\,i^3\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b^4\,g^2}+$$
$$\frac{6\,B^2\,d\,\left(b\,c-a\,d\right)^2\,i^3\,n^2\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b^4\,g^2}$$

Problem 184: Result valid but suboptimal antiderivative.

$$\int\frac{\left(c\,i+d\,i\,x\right)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{\left(a\,g+b\,g\,x\right)^3}\,dx$$

Optimal (type 4, 644 leaves, 13 steps):

$$-\frac{4 B^2 d (b c-a d) i^3 n^2 (c+d x)}{b^3 g^3 (a+b x)}-\frac{B^2 (b c-a d) i^3 n^2 (c+d x)^2}{4 b^2 g^3 (a+b x)^2}-\frac{4 B d (b c-a d) i^3 n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^3 (a+b x)}-\frac{B (b c-a d) i^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^2 g^3 (a+b x)^2}+\frac{d^3 i^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^4 g^3}-\frac{2 d (b c-a d) i^3 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^3 (a+b x)}-\frac{(b c-a d) i^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^2 g^3 (a+b x)^2}+\frac{2 B d^2 (b c-a d) i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b^4 g^3}-\frac{3 d^2 (b c-a d) i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^3}+\frac{2 B^2 d^2 (b c-a d) i^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^4 g^3}+\frac{6 B d^2 (b c-a d) i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^3}+\frac{6 B^2 d^2 (b c-a d) i^3 n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^3}$$

Result (type 4, 1512 leaves, 88 steps):

$$-\frac{B^2 (b c-a d)^3 i^3 n^2}{4 b^4 g^3 (a+b x)^2}-\frac{9 B^2 d (b c-a d)^2 i^3 n^2}{2 b^4 g^3 (a+b x)}-\frac{9 B^2 d^2 (b c-a d) i^3 n^2 \text{Log}[a+b x]}{2 b^4 g^3}-\frac{3 A B d^2 (b c-a d) i^3 n \text{Log}[a+b x]^2}{b^4 g^3}-\frac{a B^2 d^3 i^3 n^2 \text{Log}[a+b x]^2}{b^4 g^3}+\frac{5 B^2 d^2 (b c-a d) i^3 n^2 \text{Log}[a+b x]^2}{2 b^4 g^3}-\frac{3 B^2 d^2 (b c-a d) i^3 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^4 g^3}-\frac{3 B^2 d^2 (b c-a d) i^3 \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^4 g^3}-\frac{B (b c-a d)^3 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^4 g^3 (a+b x)^2}-\frac{5 B d (b c-a d)^2 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^4 g^3 (a+b x)}+\frac{2 a B d^3 i^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^4 g^3}-\frac{5 B d^2 (b c-a d) i^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^4 g^3}+\frac{d^3 i^3 x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^3}-\frac{(b c-a d)^3 i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^4 g^3 (a+b x)^2}-\frac{3 d (b c-a d)^2 i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^4 g^3 (a+b x)}+$$

$$\frac{3\,d^2\,(b\,c-a\,d)\,i^3\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{b^4\,g^3}+\frac{9\,B^2\,d^2\,(b\,c-a\,d)\,i^3\,n^2\,\mathrm{Log}[c+d\,x]}{2\,b^4\,g^3}+$$
$$\frac{2\,B^2\,c\,d^2\,i^3\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{b^3\,g^3}-\frac{5\,B^2\,d^2\,(b\,c-a\,d)\,i^3\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{b^4\,g^3}-$$
$$\frac{2\,B\,c\,d^2\,i^3\,n\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[c+d\,x]}{b^3\,g^3}+$$
$$\frac{5\,B\,d^2\,(b\,c-a\,d)\,i^3\,n\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[c+d\,x]}{b^4\,g^3}-$$
$$\frac{B^2\,c\,d^2\,i^3\,n^2\,\mathrm{Log}[c+d\,x]^2}{b^3\,g^3}+\frac{5\,B^2\,d^2\,(b\,c-a\,d)\,i^3\,n^2\,\mathrm{Log}[c+d\,x]^2}{2\,b^4\,g^3}+$$
$$\frac{6\,A\,B\,d^2\,(b\,c-a\,d)\,i^3\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^3}+\frac{2\,a\,B^2\,d^3\,i^3\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^3}-$$
$$\frac{5\,B^2\,d^2\,(b\,c-a\,d)\,i^3\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^3}+\frac{6\,A\,B\,d^2\,(b\,c-a\,d)\,i^3\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^3}+$$
$$\frac{2\,a\,B^2\,d^3\,i^3\,n^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^3}-\frac{5\,B^2\,d^2\,(b\,c-a\,d)\,i^3\,n^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{b^4\,g^3}+$$
$$\frac{2\,B^2\,c\,d^2\,i^3\,n^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^3\,g^3}-\frac{5\,B^2\,d^2\,(b\,c-a\,d)\,i^3\,n^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4\,g^3}+$$
$$\frac{6\,B^2\,d^2\,(b\,c-a\,d)\,i^3\,n\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\mathrm{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b^4\,g^3}+$$
$$\frac{6\,B^2\,d^2\,(b\,c-a\,d)\,i^3\,n^2\,\mathrm{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b^4\,g^3}$$

Problem 185: Result valid but suboptimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 4, 561 leaves, 13 steps):

$$-\frac{2 B^2 d^2 i^3 n^2 (c+d x)}{b^3 g^4 (a+b x)}-\frac{B^2 d i^3 n^2 (c+d x)^2}{4 b^2 g^4 (a+b x)^2}-$$

$$\frac{2 B^2 i^3 n^2 (c+d x)^3}{27 b g^4 (a+b x)^3}-\frac{2 B d^2 i^3 n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^4 (a+b x)}-$$

$$\frac{B d i^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^2 g^4 (a+b x)^2}-\frac{2 B i^3 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 b g^4 (a+b x)^3}-$$

$$\frac{d^2 i^3 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^4 (a+b x)}-\frac{d i^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^2 g^4 (a+b x)^2}-$$

$$\frac{i^3 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b g^4 (a+b x)^3}-\frac{d^3 i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^4}+$$

$$\frac{2 B d^3 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^4}+\frac{2 B^2 d^3 i^3 n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^4}$$

Result (type 4, 1170 leaves, 100 steps) :

$$-\frac{2 B^2 (b c-a d)^3 i^3 n^2}{27 b^4 g^4 (a+b x)^3}-\frac{17 B^2 d (b c-a d)^2 i^3 n^2}{36 b^4 g^4 (a+b x)^2}-\frac{49 B^2 d^2 (b c-a d) i^3 n^2}{18 b^4 g^4 (a+b x)}-\frac{49 B^2 d^3 i^3 n^2 \text{Log}[a+b x]}{18 b^4 g^4}-\frac{A B d^3 i^3 n \text{Log}[a+b x]^2}{b^4 g^4}+\frac{11 B^2 d^3 i^3 n^2 \text{Log}[a+b x]^2}{6 b^4 g^4}-\frac{B^2 d^3 i^3 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^4 g^4}-\frac{B^2 d^3 i^3 \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{b^4 g^4}-\frac{2 B (b c-a d)^3 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 b^4 g^4 (a+b x)^3}-\frac{7 B d (b c-a d)^2 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 b^4 g^4 (a+b x)^2}-\frac{11 B d^2 (b c-a d) i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^4 g^4 (a+b x)}-\frac{11 B d^3 i^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^4 g^4}-\frac{(b c-a d)^3 i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b^4 g^4 (a+b x)^3}-\frac{3 d (b c-a d)^2 i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^4 g^4 (a+b x)^2}-\frac{3 d^2 (b c-a d) i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^4 g^4 (a+b x)}+\frac{d^3 i^3 \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^4 g^4}+\frac{49 B^2 d^3 i^3 n^2 \text{Log}[c+d x]}{18 b^4 g^4}-\frac{11 B^2 d^3 i^3 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 b^4 g^4}+\frac{11 B d^3 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{3 b^4 g^4}+\frac{11 B^2 d^3 i^3 n^2 \text{Log}[c+d x]^2}{6 b^4 g^4}+\frac{2 A B d^3 i^3 n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^4 g^4}-\frac{11 B^2 d^3 i^3 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 b^4 g^4}+\frac{2 A B d^3 i^3 n \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{b^4 g^4}-\frac{11 B^2 d^3 i^3 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 b^4 g^4}-\frac{11 B^2 d^3 i^3 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 b^4 g^4}+\frac{2 B^2 d^3 i^3 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{b^4 g^4}+\frac{2 B^2 d^3 i^3 n^2 \text{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{b^4 g^4}$$

Problem 186: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{c i+d i x} \, dx$$

Optimal (type 4, 768 leaves, 25 steps):

$$\frac{b B^2 (b c-a d)^2 g^3 n^2 x}{3 d^3 i}+\frac{7 B (b c-a d)^2 g^3 n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d^3 i}-$$
$$\frac{b^2 B (b c-a d) g^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d^4 i}+$$
$$\frac{3 (b c-a d)^2 g^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i}-$$
$$\frac{3 b^2 (b c-a d) g^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d^4 i}+\frac{b^3 g^3 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 d^4 i}+$$
$$\frac{6 B (b c-a d)^3 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^4 i}+$$
$$\frac{(b c-a d)^3 g^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^4 i}+\frac{B^2 (b c-a d)^3 g^3 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 d^4 i}-$$
$$\frac{2 B^2 (b c-a d)^3 g^3 n^2 \text{Log}[c+d x]}{d^4 i}-\frac{7 B (b c-a d)^3 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{3 d^4 i}+$$
$$\frac{6 B^2 (b c-a d)^3 g^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i}+$$
$$\frac{2 B (b c-a d)^3 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i}+$$
$$\frac{7 B^2 (b c-a d)^3 g^3 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{3 d^4 i}-\frac{2 B^2 (b c-a d)^3 g^3 n^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i}$$

Result (type 4, 1952 leaves, 101 steps):

$$\frac{5 A b B (b c-a d)^2 g^3 n x}{3 d^3 i}+\frac{b B^2 (b c-a d)^2 g^3 n^2 x}{3 d^3 i}-\frac{a B^2 (b c-a d)^2 g^3 n^2 \text{Log}[a+b x]^2}{d^3 i}+$$
$$\frac{5 B^2 (b c-a d)^2 g^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{3 d^3 i}-\frac{B (b c-a d) g^3 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d^2 i}+$$
$$\frac{2 a B (b c-a d)^2 g^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^3 i}+$$
$$\frac{b (b c-a d)^2 g^3 x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i}-\frac{(b c-a d) g^3 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d^2 i}+$$
$$\frac{g^3 (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 d i}-\frac{2 B^2 (b c-a d)^3 g^3 n^2 \text{Log}[c+d x]}{d^4 i}+$$
$$\frac{2 b B^2 c (b c-a d)^2 g^3 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^4 i}+$$
$$\frac{5 B^2 (b c-a d)^3 g^3 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 d^4 i}-$$

$$\frac{2\,b\,B\,c\,(b\,c-a\,d)^2\,g^3\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}[c+d\,x]}{d^4\,i}-$$

$$\frac{5\,B\,(b\,c-a\,d)^3\,g^3\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}[c+d\,x]}{3\,d^4\,i}-\frac{b\,B^2\,c\,(b\,c-a\,d)^2\,g^3\,n^2\,\mathrm{Log}[c+d\,x]^2}{d^4\,i}-$$

$$\frac{5\,B^2\,(b\,c-a\,d)^3\,g^3\,n^2\,\mathrm{Log}[c+d\,x]^2}{6\,d^4\,i}+\frac{2\,a\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i}-$$

$$\frac{B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{Log}\left[(a+b\,x)^n\right]^2\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i}+\frac{B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{Log}\left[(a+b\,x)^n\right]^2\,\mathrm{Log}[i\,(c+d\,x)]}{d^4\,i}-$$

$$\frac{A\,B\,(b\,c-a\,d)^3\,g^3\,n\,\mathrm{Log}[i\,(c+d\,x)]^2}{d^4\,i}+\frac{B^2\,(b\,c-a\,d)^3\,g^3\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}[i\,(c+d\,x)]^2}{d^4\,i}-$$

$$\frac{B^2\,(b\,c-a\,d)^3\,g^3\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}[i\,(c+d\,x)]^2}{d^4\,i}-\frac{B^2\,(b\,c-a\,d)^3\,g^3\,n^2\,\mathrm{Log}[i\,(c+d\,x)]^3}{3\,d^4\,i}+$$

$$\frac{2\,B^2\,(b\,c-a\,d)^3\,g^3\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}[i\,(c+d\,x)]\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]}{d^4\,i}+$$

$$\frac{B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]^2}{d^4\,i}-\frac{B^2\,(b\,c-a\,d)^3\,g^3\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}\left[(c+d\,x)^{-n}\right]^2}{d^4\,i}+$$

$$\frac{2\,A\,B\,(b\,c-a\,d)^3\,g^3\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}[c\,i+d\,i\,x]}{d^4\,i}-$$

$$\frac{(b\,c-a\,d)^3\,g^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\mathrm{Log}[c\,i+d\,i\,x]}{d^4\,i}-\frac{1}{d^4\,i}$$

$$2\,B^2\,(b\,c-a\,d)^3\,g^3\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\left(\mathrm{Log}\left[(a+b\,x)^n\right]-\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\mathrm{Log}\left[(c+d\,x)^{-n}\right]\right)$$

$$\mathrm{Log}[c\,i+d\,i\,x]+\frac{B^2\,(b\,c-a\,d)^3\,g^3\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}[c\,i+d\,i\,x]^2}{d^4\,i}-$$

$$\frac{B^2\,(b\,c-a\,d)^3\,g^3\,n\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\mathrm{Log}[c\,i+d\,i\,x]^2}{d^4\,i}+\frac{2\,a\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^3\,i}-$$

$$\frac{2\,B^2\,(b\,c-a\,d)^3\,g^3\,n\,\mathrm{Log}\left[(a+b\,x)^n\right]\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^4\,i}+$$

$$\frac{2\,A\,B\,(b\,c-a\,d)^3\,g^3\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i}+\frac{2\,b\,B^2\,c\,(b\,c-a\,d)^2\,g^3\,n^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i}+$$

$$\frac{5\,B^2\,(b\,c-a\,d)^3\,g^3\,n^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,d^4\,i}+$$

$$\frac{2\,B^2\,(b\,c-a\,d)^3\,g^3\,n\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i}-\frac{1}{d^4\,i}2\,B^2\,(b\,c-a\,d)^3\,g^3\,n$$

$$\left(\mathrm{Log}\left[(a+b\,x)^n\right]-\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\mathrm{Log}\left[(c+d\,x)^{-n}\right]\right)\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$\frac{2 B^2 (b c-a d)^3 g^3 n^2 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{d^4 i}+\frac{2 B^2 (b c-a d)^3 g^3 n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{d^4 i}$$

Problem 187: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{c i+d i x} \, dx$$

Optimal (type 4, 573 leaves, 15 steps):

$$-\frac{B (b c-a d) g^2 n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^2 i}-\frac{2 (b c-a d) g^2 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^2 i}+$$
$$\frac{b^2 g^2 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d^3 i}-\frac{4 B (b c-a d)^2 g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^3 i}-$$
$$\frac{(b c-a d)^2 g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^3 i}+\frac{B^2 (b c-a d)^2 g^2 n^2 \text{Log}[c+d x]}{d^3 i}+$$
$$\frac{B (b c-a d)^2 g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{d^3 i}-$$
$$\frac{4 B^2 (b c-a d)^2 g^2 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i}-$$
$$\frac{2 B (b c-a d)^2 g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i}-$$
$$\frac{B^2 (b c-a d)^2 g^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{d^3 i}+\frac{2 B^2 (b c-a d)^2 g^2 n^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i}$$

Result (type 4, 1780 leaves, 82 steps):

$$-\frac{A b B (b c-a d) g^2 n x}{d^2 i}+\frac{a B^2 (b c-a d) g^2 n^2 \text{Log}[a+b x]^2}{d^2 i}-$$
$$\frac{B^2 (b c-a d) g^2 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^2 i}-$$
$$\frac{2 a B (b c-a d) g^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^2 i}-$$
$$\frac{b (b c-a d) g^2 x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^2 i}+\frac{g^2 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d i}+$$
$$\frac{B^2 (b c-a d)^2 g^2 n^2 \text{Log}[c+d x]}{d^3 i}-\frac{2 b B^2 c (b c-a d) g^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^3 i}-$$
$$\frac{B^2 (b c-a d)^2 g^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^3 i}+$$

$$\frac{2\,b\,B\,c\,(b\,c-a\,d)\,g^2\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{d^3\,i}+$$

$$\frac{B\,(b\,c-a\,d)^2\,g^2\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{d^3\,i}+\frac{b\,B^2\,c\,(b\,c-a\,d)\,g^2\,n^2\,\text{Log}[c+d\,x]^2}{d^3\,i}+$$

$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,n^2\,\text{Log}[c+d\,x]^2}{2\,d^3\,i}-\frac{2\,a\,B^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2\,i}+$$

$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i}-\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}[i\,(c+d\,x)]}{d^3\,i}+$$

$$\frac{A\,B\,(b\,c-a\,d)^2\,g^2\,n\,\text{Log}[i\,(c+d\,x)]^2}{d^3\,i}-\frac{B^2\,(b\,c-a\,d)^2\,g^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[i\,(c+d\,x)]^2}{d^3\,i}+$$

$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[i\,(c+d\,x)]^2}{d^3\,i}+\frac{B^2\,(b\,c-a\,d)^2\,g^2\,n^2\,\text{Log}[i\,(c+d\,x)]^3}{3\,d^3\,i}-$$

$$\frac{2\,B^2\,(b\,c-a\,d)^2\,g^2\,n\,\text{Log}[a+b\,x]\,\text{Log}[i\,(c+d\,x)]\,\text{Log}\left[(c+d\,x)^{-n}\right]}{d^3\,i}-$$

$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}[a+b\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{d^3\,i}+\frac{B^2\,(b\,c-a\,d)^2\,g^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{d^3\,i}-$$

$$\frac{2\,A\,B\,(b\,c-a\,d)^2\,g^2\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c\,i+d\,i\,x]}{d^3\,i}+$$

$$\frac{(b\,c-a\,d)^2\,g^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}[c\,i+d\,i\,x]}{d^3\,i}+\frac{1}{d^3\,i}$$

$$2\,B^2\,(b\,c-a\,d)^2\,g^2\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)$$

$$\text{Log}[c\,i+d\,i\,x]-\frac{B^2\,(b\,c-a\,d)^2\,g^2\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c\,i+d\,i\,x]^2}{d^3\,i}+$$

$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}[c\,i+d\,i\,x]^2}{d^3\,i}-\frac{2\,a\,B^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^2\,i}+$$

$$\frac{2\,B^2\,(b\,c-a\,d)^2\,g^2\,n\,\text{Log}\left[(a+b\,x)^n\right]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^3\,i}-$$

$$\frac{2\,A\,B\,(b\,c-a\,d)^2\,g^2\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i}-$$

$$\frac{2\,b\,B^2\,c\,(b\,c-a\,d)\,g^2\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i}-\frac{B^2\,(b\,c-a\,d)^2\,g^2\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i}-$$

$$\frac{2\,B^2\,(b\,c-a\,d)^2\,g^2\,n\,\text{Log}\left[(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i}+\frac{1}{d^3\,i}2\,B^2\,(b\,c-a\,d)^2\,g^2\,n$$

$$\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$\frac{2 B^2 (b c - a d)^2 g^2 n^2 \text{PolyLog}\left[3, -\frac{d (a+b x)}{b c-a d}\right]}{d^3 i} - \frac{2 B^2 (b c - a d)^2 g^2 n^2 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{d^3 i}$$

Problem 188: Result valid but suboptimal antiderivative.

$$\int \frac{(a g + b g x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{c i + d i x} \, dx$$

Optimal (type 4, 303 leaves, 9 steps):

$$\frac{g (a + b x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d i} + \frac{2 B (b c - a d) g n \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^2 i} +$$
$$\frac{(b c - a d) g \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^2 i} + \frac{2 B^2 (b c - a d) g n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i} +$$
$$\frac{2 B (b c - a d) g n \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i} -$$
$$\frac{2 B^2 (b c - a d) g n^2 \text{PolyLog}\left[3, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i}$$

Result (type 4, 1156 leaves, 65 steps):

$$-\frac{a B^2 g n^2 \text{Log}[a+b x]^2}{d i}+\frac{2 a B g n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d i}+$$
$$\frac{b g x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d i}+\frac{2 A B (b c-a d) g n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^2 i}+$$
$$\frac{2 b B^2 c g n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^2 i}+\frac{B^2 (b c-a d) g \text{Log}\left[(a+b x)^n\right]^2 \text{Log}[c+d x]}{d^2 i}-$$
$$\frac{2 b B c g n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{d^2 i}-$$
$$\frac{(b c-a d) g \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}[c+d x]}{d^2 i}-\frac{A B (b c-a d) g n \text{Log}[c+d x]^2}{d^2 i}-$$
$$\frac{b B^2 c g n^2 \text{Log}[c+d x]^2}{d^2 i}+\frac{B^2 (b c-a d) g n^2 \text{Log}[a+b x] \text{Log}[c+d x]^2}{d^2 i}-$$
$$\frac{B^2 (b c-a d) g n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]^2}{d^2 i}-\frac{B^2 (b c-a d) g n^2 \text{Log}[c+d x]^3}{3 d^2 i}+$$
$$\frac{2 a B^2 g n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d i}-\frac{B^2 (b c-a d) g \text{Log}\left[(a+b x)^n\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2 i}+$$
$$\frac{2 B^2 (b c-a d) g n \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[(c+d x)^{-n}\right]}{d^2 i}+$$
$$\frac{B^2 (b c-a d) g \text{Log}[a+b x] \text{Log}\left[(c+d x)^{-n}\right]^2}{d^2 i}-\frac{B^2 (b c-a d) g \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^{-n}\right]^2}{d^2 i}-$$
$$\frac{1}{d^2 i} 2 B^2 (b c-a d) g n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]$$
$$\left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right)+\frac{2 a B^2 g n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d i}-$$
$$\frac{2 B^2 (b c-a d) g n \text{Log}\left[(a+b x)^n\right] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^2 i}+\frac{2 A B (b c-a d) g n \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i}+$$
$$\frac{2 b B^2 c g n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i}+\frac{2 B^2 (b c-a d) g n \text{Log}\left[(c+d x)^{-n}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i}-\frac{1}{d^2 i}$$
$$2 B^2 (b c-a d) g n \left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+$$
$$\frac{2 B^2 (b c-a d) g n^2 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{d^2 i}+\frac{2 B^2 (b c-a d) g n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i}$$

Problem 189: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{c i+d i x} \, dx$$

Optimal (type 4, 137 leaves, 4 steps):

$$-\frac{\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{d\,i}-\frac{2\,B\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d\,i}+\frac{2\,B^2\,n^2\,\mathrm{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d\,i}$$

Result (type 4, 782 leaves, 45 steps):

$$\frac{B^2\,\mathrm{Log}\left[(a+b\,x)^n\right]^2\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,i}-\frac{B^2\,\mathrm{Log}\left[(a+b\,x)^n\right]^2\mathrm{Log}\left[i\,(c+d\,x)\right]}{d\,i}+\frac{A\,B\,n\,\mathrm{Log}\left[i\,(c+d\,x)\right]^2}{d\,i}-\frac{B^2\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[i\,(c+d\,x)\right]^2}{d\,i}+\frac{B^2\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}\left[i\,(c+d\,x)\right]^2}{d\,i}+\frac{B^2\,n^2\,\mathrm{Log}\left[i\,(c+d\,x)\right]^3}{3\,d\,i}-\frac{2\,B^2\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[i\,(c+d\,x)\right]\mathrm{Log}\left[(c+d\,x)^{-n}\right]}{d\,i}-\frac{B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]^2}{d\,i}+\frac{B^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}\left[(c+d\,x)^{-n}\right]^2}{d\,i}-\frac{2\,A\,B\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}[c\,i+d\,i\,x]}{d\,i}+\frac{\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\mathrm{Log}[c\,i+d\,i\,x]}{d\,i}+\frac{1}{d\,i}2\,B^2\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\left(\mathrm{Log}\left[(a+b\,x)^n\right]-\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\mathrm{Log}\left[(c+d\,x)^{-n}\right]\right)\mathrm{Log}[c\,i+d\,i\,x]-\frac{B^2\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\mathrm{Log}[c\,i+d\,i\,x]^2}{d\,i}+\frac{B^2\,n\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\mathrm{Log}[c\,i+d\,i\,x]^2}{d\,i}+\frac{2\,B^2\,n\,\mathrm{Log}\left[(a+b\,x)^n\right]\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d\,i}-\frac{2\,A\,B\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,i}-\frac{2\,B^2\,n\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,i}+\frac{1}{d\,i}2\,B^2\,n\left(\mathrm{Log}\left[(a+b\,x)^n\right]-\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\mathrm{Log}\left[(c+d\,x)^{-n}\right]\right)\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-\frac{2\,B^2\,n^2\,\mathrm{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d\,i}-\frac{2\,B^2\,n^2\,\mathrm{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,i}$$

Problem 190: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 50 leaves, 3 steps):

$$\frac{\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^3}{3\,B\,(b\,c-a\,d)\,g\,i\,n}$$

Result (type 4, 1237 leaves, 59 steps):

$$-\frac{A\,B\,n\,\mathrm{Log}[a+b\,x]^2}{(b\,c-a\,d)\,g\,i}-\frac{B^2\,\mathrm{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)\,g\,i}-$$
$$\frac{B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)\,g\,i}+\frac{\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)\,g\,i}+$$
$$\frac{2\,A\,B\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)\,g\,i}+\frac{B^2\,\mathrm{Log}\left[(a+b\,x)^n\right]^2\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)\,g\,i}-$$
$$\frac{\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)\,g\,i}-\frac{A\,B\,n\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)\,g\,i}+\frac{B^2\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)\,g\,i}-$$
$$\frac{B^2\,n\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)\,g\,i}-\frac{B^2\,n^2\,\mathrm{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)\,g\,i}+\frac{2\,A\,B\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}-$$
$$\frac{B^2\,\mathrm{Log}\left[(a+b\,x)^n\right]^2\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}+\frac{2\,B^2\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}[c+d\,x]\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]}{(b\,c-a\,d)\,g\,i}+$$
$$\frac{B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)\,g\,i}-\frac{B^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)\,g\,i}-\frac{1}{(b\,c-a\,d)\,g\,i}$$
$$2\,B^2\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]\,\left(\mathrm{Log}\left[(a+b\,x)^n\right]-\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\mathrm{Log}\left[(c+d\,x)^{-n}\right]\right)+$$
$$\frac{2\,A\,B\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}-\frac{2\,B^2\,n\,\mathrm{Log}\left[(a+b\,x)^n\right]\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}+$$
$$\frac{2\,A\,B\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}+\frac{2\,B^2\,n\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}-\frac{1}{(b\,c-a\,d)\,g\,i}$$
$$2\,B^2\,n\,\left(\mathrm{Log}\left[(a+b\,x)^n\right]-\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\mathrm{Log}\left[(c+d\,x)^{-n}\right]\right)\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$
$$\frac{2\,B^2\,n\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\mathrm{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)\,g\,i}+\frac{2\,B^2\,n^2\,\mathrm{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}+$$
$$\frac{2\,B^2\,n^2\,\mathrm{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)\,g\,i}+\frac{2\,B^2\,n^2\,\mathrm{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)\,g\,i}$$

Problem 191: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 199 leaves, 7 steps):

$$-\frac{2\,b\,B^2\,n^2\,(c+d\,x)}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{2\,b\,B\,n\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{b\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{d\,\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^3}{3\,B\,(b\,c-a\,d)^2\,g^2\,i\,n}$$

Result (type 4, 1800 leaves, 83 steps):

$$-\frac{2\,B^2\,n^2}{(b\,c-a\,d)\,g^2\,i\,(a+b\,x)}-\frac{2\,B^2\,d\,n^2\,\text{Log}[a+b\,x]}{(b\,c-a\,d)^2\,g^2\,i}+\frac{A\,B\,d\,n\,\text{Log}[a+b\,x]^2}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B^2\,d\,n^2\,\text{Log}[a+b\,x]^2}{(b\,c-a\,d)^2\,g^2\,i}+$$
$$\frac{B^2\,d\,\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B^2\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)^2\,g^2\,i}-$$
$$\frac{2\,B\,n\,\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)\,g^2\,i\,(a+b\,x)}-\frac{2\,B\,d\,n\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^2\,g^2\,i}-$$
$$\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)\,g^2\,i\,(a+b\,x)}-\frac{d\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^2\,g^2\,i}+\frac{2\,B^2\,d\,n^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}-$$
$$\frac{2\,A\,B\,d\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}-\frac{2\,B^2\,d\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}-$$
$$\frac{B^2\,d\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}+\frac{2\,B\,d\,n\,\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}+$$
$$\frac{d\,\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g^2\,i}+\frac{A\,B\,d\,n\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B^2\,d\,n^2\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^2\,g^2\,i}-$$
$$\frac{B^2\,d\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B^2\,d\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^2\,g^2\,i}+\frac{B^2\,d\,n^2\,\text{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)^2\,g^2\,i}-$$
$$\frac{2\,A\,B\,d\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g^2\,i}-\frac{2\,B^2\,d\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g^2\,i}+$$
$$\frac{B^2\,d\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g^2\,i}-\frac{2\,B^2\,d\,n\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]}{(b\,c-a\,d)^2\,g^2\,i}-$$

$$\frac{B^2 d \,\text{Log}[a+b x]\, \text{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^2 g^2 i}+\frac{B^2 d \,\text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^2 g^2 i}+\frac{1}{(b c-a d)^2 g^2 i}$$

$$2 B^2 d n \,\text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x] \left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right)-$$

$$\frac{2 A B d n \,\text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-\frac{2 B^2 d n^2 \,\text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}+$$

$$\frac{2 B^2 d n \,\text{Log}\left[(a+b x)^n\right] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-\frac{2 A B d n \,\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-$$

$$\frac{2 B^2 d n^2 \,\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-\frac{2 B^2 d n \,\text{Log}\left[(c+d x)^{-n}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}+\frac{1}{(b c-a d)^2 g^2 i}$$

$$2 B^2 d n \left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-$$

$$\frac{2 B^2 d n \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^2 g^2 i}-\frac{2 B^2 d n^2 \,\text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-$$

$$\frac{2 B^2 d n^2 \,\text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^2 g^2 i}-\frac{2 B^2 d n^2 \,\text{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^2 g^2 i}$$

Problem 192: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^3 (c i+d i x)} \, dx$$

Optimal (type 3, 369 leaves, 9 steps):

$$\frac{4 b B^2 d n^2 (c+d x)}{(b c-a d)^3 g^3 i (a+b x)}-\frac{b^2 B^2 n^2 (c+d x)^2}{4 (b c-a d)^3 g^3 i (a+b x)^2}+\frac{4 b B d n (c+d x) \left(A+B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^3 i (a+b x)}-$$

$$\frac{b^2 B n (c+d x)^2 \left(A+B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^3 g^3 i (a+b x)^2}+\frac{2 b d (c+d x) \left(A+B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g^3 i (a+b x)}-$$

$$\frac{b^2 (c+d x)^2 \left(A+B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^3 g^3 i (a+b x)^2}+\frac{d^2 \left(A+B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{3 B (b c-a d)^3 g^3 i n}$$

Result (type 4, 2025 leaves, 111 steps):

$$-\frac{B^2 n^2}{4 (b c-a d) g^3 i (a+b x)^2}+\frac{7 B^2 d n^2}{2 (b c-a d)^2 g^3 i (a+b x)}+\frac{7 B^2 d^2 n^2 \,\text{Log}[a+b x]}{2 (b c-a d)^3 g^3 i}-$$

$$\frac{A B d^2 n \text{Log}[a+b x]^2}{(b c-a d)^3 g^3 i}-\frac{3 B^2 d^2 n^2 \text{Log}[a+b x]^2}{2 (b c-a d)^3 g^3 i}-\frac{B^2 d^2 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^3 g^3 i}-$$

$$\frac{B^2 d^2 \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^3 g^3 i}-\frac{B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d) g^3 i (a+b x)^2}+\frac{3 B d n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^2 g^3 i (a+b x)}+$$

$$\frac{3 B d^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^3 i}-\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d) g^3 i (a+b x)^2}+$$

$$\frac{d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^2 g^3 i (a+b x)}+\frac{d^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g^3 i}-\frac{7 B^2 d^2 n^2 \text{Log}[c+d x]}{2 (b c-a d)^3 g^3 i}+$$

$$\frac{2 A B d^2 n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^3 g^3 i}+\frac{3 B^2 d^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^3 g^3 i}+$$

$$\frac{B^2 d^2 \text{Log}\left[(a+b x)^n\right]^2 \text{Log}[c+d x]}{(b c-a d)^3 g^3 i}-\frac{3 B d^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{(b c-a d)^3 g^3 i}-$$

$$\frac{d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}[c+d x]}{(b c-a d)^3 g^3 i}-\frac{A B d^2 n \text{Log}[c+d x]^2}{(b c-a d)^3 g^3 i}-\frac{3 B^2 d^2 n^2 \text{Log}[c+d x]^2}{2 (b c-a d)^3 g^3 i}+$$

$$\frac{B^2 d^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x]^2}{(b c-a d)^3 g^3 i}-\frac{B^2 d^2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]^2}{(b c-a d)^3 g^3 i}-\frac{B^2 d^2 n^2 \text{Log}[c+d x]^3}{3 (b c-a d)^3 g^3 i}+$$

$$\frac{2 A B d^2 n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}+\frac{3 B^2 d^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}-$$

$$\frac{B^2 d^2 \text{Log}\left[(a+b x)^n\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}+\frac{2 B^2 d^2 n \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[(c+d x)^{-n}\right]}{(b c-a d)^3 g^3 i}+$$

$$\frac{B^2 d^2 \text{Log}[a+b x] \text{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^3 g^3 i}-\frac{B^2 d^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^3 g^3 i}-\frac{1}{(b c-a d)^3 g^3 i}$$

$$2 B^2 d^2 n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x] \left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right)+$$

$$\frac{2 A B d^2 n \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}+\frac{3 B^2 d^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}-$$

$$\frac{2 B^2 d^2 n \text{Log}\left[(a+b x)^n\right] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}+\frac{2 A B d^2 n \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}+$$

$$\frac{3 B^2 d^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}+\frac{2 B^2 d^2 n \text{Log}\left[(c+d x)^{-n}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g^3 i}-\frac{1}{(b c-a d)^3 g^3 i}$$

$$2 B^2 d^2 n \left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+$$

$$\frac{2\,B^2\,d^2\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{PolyLog}\left[2,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^3\,g^3\,i}+\frac{2\,B^2\,d^2\,n^2\,\text{PolyLog}\left[3,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+$$
$$\frac{2\,B^2\,d^2\,n^2\,\text{PolyLog}\left[3,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^3\,i}+\frac{2\,B^2\,d^2\,n^2\,\text{PolyLog}\left[3,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^3\,g^3\,i}$$

Problem 193: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^4\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 543 leaves, 11 steps):

$$-\frac{6\,b\,B^2\,d^2\,n^2\,(c+d\,x)}{(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)}+\frac{3\,b^2\,B^2\,d\,n^2\,(c+d\,x)^2}{4\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^2}-$$
$$\frac{2\,b^3\,B^2\,n^2\,(c+d\,x)^3}{27\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^3}-\frac{6\,b\,B\,d^2\,n\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)}+$$
$$\frac{3\,b^2\,B\,d\,n\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^2}-\frac{2\,b^3\,B\,n\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{9\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^3}-$$
$$\frac{3\,b\,d^2\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)}+\frac{3\,b^2\,d\,(c+d\,x)^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^2}-$$
$$\frac{b^3\,(c+d\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^3}-\frac{d^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^3}{3\,B\,(b\,c-a\,d)^4\,g^4\,i\,n}$$

Result (type 4, 2180 leaves, 143 steps):

$$-\frac{2\,B^2\,n^2}{27\,(b\,c-a\,d)\,g^4\,i\,(a+b\,x)^3}+\frac{19\,B^2\,d\,n^2}{36\,(b\,c-a\,d)^2\,g^4\,i\,(a+b\,x)^2}-\frac{85\,B^2\,d^2\,n^2}{18\,(b\,c-a\,d)^3\,g^4\,i\,(a+b\,x)}-$$
$$\frac{85\,B^2\,d^3\,n^2\,\text{Log}[a+b\,x]}{18\,(b\,c-a\,d)^4\,g^4\,i}+\frac{A\,B\,d^3\,n\,\text{Log}[a+b\,x]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{11\,B^2\,d^3\,n^2\,\text{Log}[a+b\,x]^2}{6\,(b\,c-a\,d)^4\,g^4\,i}+$$
$$\frac{B^2\,d^3\,\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{B^2\,d^3\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)^4\,g^4\,i}-$$
$$\frac{2\,B\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{9\,(b\,c-a\,d)\,g^4\,i\,(a+b\,x)^3}+\frac{5\,B\,d\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,(b\,c-a\,d)^2\,g^4\,i\,(a+b\,x)^2}-$$
$$\frac{11\,B\,d^2\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,c-a\,d)^3\,g^4\,i\,(a+b\,x)}-\frac{11\,B\,d^3\,n\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,(b\,c-a\,d)\,g^4\,i\,(a+b\,x)^3}+\frac{d\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,(b\,c-a\,d)^2\,g^4\,i\,(a+b\,x)^2}-\frac{d^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^3\,g^4\,i\,(a+b\,x)}-$$

$$\frac{d^3\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{85\,B^2\,d^3\,n^2\,\text{Log}[c+d\,x]}{18\,(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{2\,A\,B\,d^3\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{11\,B^2\,d^3\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{3\,(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{B^2\,d^3\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^4\,i}+\frac{11\,B\,d^3\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{3\,(b\,c-a\,d)^4\,g^4\,i}+$$

$$\frac{d^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^4\,g^4\,i}+\frac{A\,B\,d^3\,n\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{11\,B^2\,d^3\,n^2\,\text{Log}[c+d\,x]^2}{6\,(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{B^2\,d^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{B^2\,d^3\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{B^2\,d^3\,n^2\,\text{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{2\,A\,B\,d^3\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{11\,B^2\,d^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^4\,g^4\,i}+$$

$$\frac{B^2\,d^3\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,B^2\,d^3\,n\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]}{(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{B^2\,d^3\,\text{Log}[a+b\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{B^2\,d^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)^4\,g^4\,i}+\frac{1}{(b\,c-a\,d)^4\,g^4\,i}$$

$$2\,B^2\,d^3\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]\,\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)-$$

$$\frac{2\,A\,B\,d^3\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{11\,B^2\,d^3\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^4\,g^4\,i}+$$

$$\frac{2\,B^2\,d^3\,n\,\text{Log}\left[(a+b\,x)^n\right]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,A\,B\,d^3\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{11\,B^2\,d^3\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,B^2\,d^3\,n\,\text{Log}\left[(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}+\frac{1}{(b\,c-a\,d)^4\,g^4\,i}$$

$$2\,B^2\,d^3\,n\,\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$\frac{2\,B^2\,d^3\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,B^2\,d^3\,n^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-$$

$$\frac{2\,B^2\,d^3\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^4\,i}-\frac{2\,B^2\,d^3\,n^2\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4\,g^4\,i}$$

Problem 194: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(c i+d i x)^2} \, dx$$

Optimal (type 4, 770 leaves, 18 steps):

$$\frac{2 A B (b c-a d)^2 g^3 n (a+b x)}{d^3 i^2 (c+d x)}-\frac{2 B^2 (b c-a d)^2 g^3 n^2 (a+b x)}{d^3 i^2 (c+d x)}+$$

$$\frac{2 B^2 (b c-a d)^2 g^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^3 i^2 (c+d x)}-\frac{b B (b c-a d) g^3 n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^3 i^2}-$$

$$\frac{3 b (b c-a d) g^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i^2}-\frac{(b c-a d)^2 g^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i^2 (c+d x)}+$$

$$\frac{b^3 g^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d^4 i^2}-\frac{6 b B (b c-a d)^2 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^4 i^2}-$$

$$\frac{3 b (b c-a d)^2 g^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^4 i^2}+\frac{b B^2 (b c-a d)^2 g^3 n^2 \text{Log}[c+d x]}{d^4 i^2}+$$

$$\frac{b B (b c-a d)^2 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{d^4 i^2}-$$

$$\frac{6 b B^2 (b c-a d)^2 g^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^2}-$$

$$\frac{6 b B (b c-a d)^2 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^2}-$$

$$\frac{b B^2 (b c-a d)^2 g^3 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{d^4 i^2}+\frac{6 b B^2 (b c-a d)^2 g^3 n^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^2}$$

Result (type 4, 2384 leaves, 112 steps):

$$-\frac{A b^2 B (b c-a d) g^3 n x}{d^3 i^2}+\frac{2 B^2 (b c-a d)^3 g^3 n^2}{d^4 i^2 (c+d x)}+\frac{2 b B^2 (b c-a d)^2 g^3 n^2 \text{Log}[a+b x]}{d^4 i^2}+$$

$$\frac{a^2 b B^2 g^3 n^2 \text{Log}[a+b x]^2}{2 d^2 i^2}+\frac{a b B^2 (2 b c-3 a d) g^3 n^2 \text{Log}[a+b x]^2}{d^3 i^2}+$$

$$\frac{b B^2 (b c-a d)^2 g^3 n^2 \text{Log}[a+b x]^2}{d^4 i^2}-\frac{b B^2 (b c-a d) g^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^3 i^2}-$$

$$\frac{2 B (b c-a d)^3 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^4 i^2 (c+d x)}-\frac{a^2 b B g^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^2 i^2}-$$

$$\frac{2 a b B (2 b c-3 a d) g^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^3 i^2}-$$

$$\frac{2\,b\,B\,(b\,c-a\,d)^2\,g^3\,n\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{d^4\,i^2}-$$

$$\frac{b^2\,(2\,b\,c-3\,a\,d)\,g^3\,x\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{d^3\,i^2}+\frac{b^3\,g^3\,x^2\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,d^2\,i^2}+$$

$$\frac{(b\,c-a\,d)^3\,g^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{d^4\,i^2\,(c+d\,x)}-\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\text{Log}[c+d\,x]}{d^4\,i^2}-$$

$$\frac{6\,A\,b\,B\,(b\,c-a\,d)^2\,g^3\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{d^4\,i^2}-\frac{b^3\,B^2\,c^2\,g^3\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{d^4\,i^2}-$$

$$\frac{2\,b^2\,B^2\,c\,(2\,b\,c-3\,a\,d)\,g^3\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{d^4\,i^2}-$$

$$\frac{2\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{d^4\,i^2}-$$

$$\frac{3\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}[c+d\,x]}{d^4\,i^2}+\frac{b^3\,B\,c^2\,g^3\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{d^4\,i^2}+$$

$$\frac{2\,b^2\,B\,c\,(2\,b\,c-3\,a\,d)\,g^3\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{d^4\,i^2}+$$

$$\frac{2\,b\,B\,(b\,c-a\,d)^2\,g^3\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}[c+d\,x]}{d^4\,i^2}+$$

$$\frac{3\,b\,(b\,c-a\,d)^2\,g^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}[c+d\,x]}{d^4\,i^2}+\frac{3\,A\,b\,B\,(b\,c-a\,d)^2\,g^3\,n\,\text{Log}[c+d\,x]^2}{d^4\,i^2}+$$

$$\frac{b^3\,B^2\,c^2\,g^3\,n^2\,\text{Log}[c+d\,x]^2}{2\,d^4\,i^2}+\frac{b^2\,B^2\,c\,(2\,b\,c-3\,a\,d)\,g^3\,n^2\,\text{Log}[c+d\,x]^2}{d^4\,i^2}+$$

$$\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\text{Log}[c+d\,x]^2}{d^4\,i^2}-\frac{3\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{d^4\,i^2}+$$

$$\frac{3\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}[c+d\,x]^2}{d^4\,i^2}+\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\text{Log}[c+d\,x]^3}{d^4\,i^2}-$$

$$\frac{a^2\,b\,B^2\,g^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2\,i^2}-\frac{2\,a\,b\,B^2\,(2\,b\,c-3\,a\,d)\,g^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}-$$

$$\frac{2\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^2}+$$

$$\frac{3\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^2}-$$

$$\frac{6\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,n\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]}{d^4\,i^2}-$$

$$\frac{3\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,\text{Log}[a+b\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{d^4\,i^2}+$$

$$\frac{3\, b\, B^2 \,(b\, c - a\, d)^2\, g^3 \,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right] \,\text{Log}\left[(c + d\, x)^{-n}\right]^2}{d^4\, i^2} + \frac{1}{d^4\, i^2} 6\, b\, B^2 \,(b\, c - a\, d)^2\, g^3\, n$$

$$\text{Log}\left[-\frac{d\,(a + b\, x)}{b\, c - a\, d}\right] \text{Log}[c + d\, x] \left(\text{Log}\left[(a + b\, x)^n\right] - \text{Log}\left[e\left(\frac{a + b\, x}{c + d\, x}\right)^n\right] + \text{Log}\left[(c + d\, x)^{-n}\right]\right) -$$

$$\frac{a^2\, b\, B^2\, g^3\, n^2 \,\text{PolyLog}\left[2, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^2\, i^2} - \frac{2\, a\, b\, B^2 \,(2\, b\, c - 3\, a\, d)\, g^3\, n^2 \,\text{PolyLog}\left[2, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^3\, i^2} -$$

$$\frac{2\, b\, B^2 \,(b\, c - a\, d)^2\, g^3\, n^2 \,\text{PolyLog}\left[2, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^4\, i^2} +$$

$$\frac{6\, b\, B^2 \,(b\, c - a\, d)^2\, g^3\, n \,\text{Log}\left[(a + b\, x)^n\right] \text{PolyLog}\left[2, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^4\, i^2} -$$

$$\frac{6\, A\, b\, B \,(b\, c - a\, d)^2\, g^3\, n \,\text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\, i^2} - \frac{b^3\, B^2\, c^2\, g^3\, n^2 \,\text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\, i^2} -$$

$$\frac{2\, b^2\, B^2\, c \,(2\, b\, c - 3\, a\, d)\, g^3\, n^2 \,\text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\, i^2} - \frac{2\, b\, B^2 \,(b\, c - a\, d)^2\, g^3\, n^2 \,\text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\, i^2} -$$

$$\frac{6\, b\, B^2 \,(b\, c - a\, d)^2\, g^3\, n \,\text{Log}\left[(c + d\, x)^{-n}\right] \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\, i^2} + \frac{1}{d^4\, i^2} 6\, b\, B^2 \,(b\, c - a\, d)^2\, g^3$$

$$n \left(\text{Log}\left[(a + b\, x)^n\right] - \text{Log}\left[e\left(\frac{a + b\, x}{c + d\, x}\right)^n\right] + \text{Log}\left[(c + d\, x)^{-n}\right]\right) \text{PolyLog}\left[2, \frac{b\,(c + d\, x)}{b\, c - a\, d}\right] -$$

$$\frac{6\, b\, B^2 \,(b\, c - a\, d)^2\, g^3\, n^2 \,\text{PolyLog}\left[3, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^4\, i^2} - \frac{6\, b\, B^2 \,(b\, c - a\, d)^2\, g^3\, n^2 \,\text{PolyLog}\left[3, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\, i^2}$$

Problem 195: Result valid but suboptimal antiderivative.

$$\int \frac{(a\, g + b\, g\, x)^2 \left(A + B\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(c\, i + d\, i\, x)^2}\, dx$$

Optimal (type 4, 500 leaves, 12 steps):

$$-\frac{2 A B (b c-a d) g^2 n (a+b x)}{d^2 i^2 (c+d x)}+\frac{2 B^2 (b c-a d) g^2 n^2 (a+b x)}{d^2 i^2 (c+d x)}-\frac{2 B^2 (b c-a d) g^2 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^2 i^2 (c+d x)}+\frac{b g^2 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^2 i^2}+\frac{(b c-a d) g^2 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^2 i^2 (c+d x)}+\frac{2 b B (b c-a d) g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^3 i^2}+\frac{2 b (b c-a d) g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^3 i^2}+\frac{2 b B^2 (b c-a d) g^2 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^2}+\frac{4 b B (b c-a d) g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^2}-\frac{4 b B^2 (b c-a d) g^2 n^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^2}$$

Result (type 4, 1807 leaves, 89 steps):

$$-\frac{2 B^2 (b c-a d)^2 g^2 n^2}{d^3 i^2 (c+d x)}-\frac{2 b B^2 (b c-a d) g^2 n^2 \text{Log}[a+b x]}{d^3 i^2}-\frac{a b B^2 g^2 n^2 \text{Log}[a+b x]^2}{d^2 i^2}-\frac{b B^2 (b c-a d) g^2 n^2 \text{Log}[a+b x]^2}{d^3 i^2}+\frac{2 B (b c-a d)^2 g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^3 i^2 (c+d x)}+\frac{2 a b B g^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^2 i^2}+\frac{2 b B (b c-a d) g^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^3 i^2}+\frac{b^2 g^2 x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^2 i^2}-\frac{(b c-a d)^2 g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i^2 (c+d x)}+\frac{2 b B^2 (b c-a d) g^2 n^2 \text{Log}[c+d x]}{d^3 i^2}+\frac{4 A b B (b c-a d) g^2 n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^3 i^2}+\frac{2 b^2 B^2 c g^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^3 i^2}+\frac{2 b B^2 (b c-a d) g^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^3 i^2}+\frac{2 b B^2 (b c-a d) g^2 \text{Log}\left[(a+b x)^n\right]^2 \text{Log}[c+d x]}{d^3 i^2}-\frac{2 b^2 B c g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{d^3 i^2}-\frac{2 b B (b c-a d) g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{d^3 i^2}-$$

$$\frac{2\,b\,(b\,c-a\,d)\,g^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\text{Log}[c+d\,x]}{d^3\,i^2}-$$

$$\frac{2\,A\,b\,B\,(b\,c-a\,d)\,g^2\,n\,\text{Log}[c+d\,x]^2}{d^3\,i^2}-\frac{b^2\,B^2\,c\,g^2\,n^2\,\text{Log}[c+d\,x]^2}{d^3\,i^2}-$$

$$\frac{b\,B^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{Log}[c+d\,x]^2}{d^3\,i^2}+\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{d^3\,i^2}-$$

$$\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\text{Log}[c+d\,x]^2}{d^3\,i^2}-\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{Log}[c+d\,x]^3}{3\,d^3\,i^2}+$$

$$\frac{2\,a\,b\,B^2\,g^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2\,i^2}+\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}-$$

$$\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\text{Log}\left[(a+b\,x)^n\right]^2\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+$$

$$\frac{4\,b\,B^2\,(b\,c-a\,d)\,g^2\,n\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]}{d^3\,i^2}+$$

$$\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\text{Log}[a+b\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{d^3\,i^2}-$$

$$\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\text{Log}\left[(c+d\,x)^{-n}\right]^2}{d^3\,i^2}-\frac{1}{d^3\,i^2}4\,b\,B^2\,(b\,c-a\,d)\,g^2\,n$$

$$\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\text{Log}[c+d\,x]\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)+$$

$$\frac{2\,a\,b\,B^2\,g^2\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^2\,i^2}+\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}-$$

$$\frac{4\,b\,B^2\,(b\,c-a\,d)\,g^2\,n\,\text{Log}\left[(a+b\,x)^n\right]\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+$$

$$\frac{4\,A\,b\,B\,(b\,c-a\,d)\,g^2\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+\frac{2\,b^2\,B^2\,c\,g^2\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+$$

$$\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+$$

$$\frac{4\,b\,B^2\,(b\,c-a\,d)\,g^2\,n\,\text{Log}\left[(c+d\,x)^{-n}\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}-\frac{1}{d^3\,i^2}4\,b\,B^2\,(b\,c-a\,d)\,g^2$$

$$n\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$\frac{4\,b\,B^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}+\frac{4\,b\,B^2\,(b\,c-a\,d)\,g^2\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3\,i^2}$$

Problem 196: Result valid but suboptimal antiderivative.

$$\int \frac{(a g + b g x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(c i + d i x)^2} \, dx$$

Optimal (type 4, 282 leaves, 9 steps):

$$\frac{2 A B g n (a + b x)}{d i^2 (c + d x)} - \frac{2 B^2 g n^2 (a + b x)}{d i^2 (c + d x)} + \frac{2 B^2 g n (a + b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d i^2 (c + d x)} -$$

$$\frac{g (a + b x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d i^2 (c + d x)} - \frac{b g \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^2 i^2} -$$

$$\frac{2 b B g n \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i^2} + \frac{2 b B^2 g n^2 \operatorname{PolyLog}\left[3, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i^2}$$

Result (type 4, 1157 leaves, 69 steps):

$$\frac{2 B^2 (b c-a d) g n^2}{d^2 i^2 (c+d x)}+\frac{2 b B^2 g n^2 \text{Log}[a+b x]}{d^2 i^2}+\frac{b B^2 g n^2 \text{Log}[a+b x]^2}{d^2 i^2}-$$
$$\frac{2 B (b c-a d) g n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^2 i^2 (c+d x)}-\frac{2 b B g n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^2 i^2}+$$
$$\frac{(b c-a d) g \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^2 i^2 (c+d x)}-\frac{2 b B^2 g n^2 \text{Log}[c+d x]}{d^2 i^2}-$$
$$\frac{2 A b B g n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^2 i^2}-\frac{2 b B^2 g n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^2 i^2}-$$
$$\frac{b B^2 g \text{Log}\left[(a+b x)^n\right]^2 \text{Log}[c+d x]}{d^2 i^2}+\frac{2 b B g n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{d^2 i^2}+$$
$$\frac{b g \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}[c+d x]}{d^2 i^2}+\frac{A b B g n \text{Log}[c+d x]^2}{d^2 i^2}+\frac{b B^2 g n^2 \text{Log}[c+d x]^2}{d^2 i^2}-$$
$$\frac{b B^2 g n^2 \text{Log}[a+b x] \text{Log}[c+d x]^2}{d^2 i^2}+\frac{b B^2 g n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]^2}{d^2 i^2}+$$
$$\frac{b B^2 g n^2 \text{Log}[c+d x]^3}{3 d^2 i^2}-\frac{2 b B^2 g n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2}+$$
$$\frac{b B^2 g \text{Log}\left[(a+b x)^n\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2}-\frac{2 b B^2 g n \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[(c+d x)^{-n}\right]}{d^2 i^2}-$$
$$\frac{b B^2 g \text{Log}[a+b x] \text{Log}\left[(c+d x)^{-n}\right]^2}{d^2 i^2}+\frac{b B^2 g \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^{-n}\right]^2}{d^2 i^2}+\frac{1}{d^2 i^2}$$
$$2 b B^2 g n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x] \left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right)-$$
$$\frac{2 b B^2 g n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^2 i^2}+\frac{2 b B^2 g n \text{Log}\left[(a+b x)^n\right] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^2 i^2}-$$
$$\frac{2 A b B g n \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2}-\frac{2 b B^2 g n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2}-$$
$$\frac{2 b B^2 g n \text{Log}\left[(c+d x)^{-n}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2}+\frac{1}{d^2 i^2}$$
$$2 b B^2 g n \left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-$$
$$\frac{2 b B^2 g n^2 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{d^2 i^2}-\frac{2 b B^2 g n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{d^2 i^2}$$

Problem 197: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 163 leaves, 4 steps):

$$-\frac{2\,A\,B\,n\,(a+b\,x)}{(b\,c-a\,d)\,i^2\,(c+d\,x)}+\frac{2\,B^2\,n^2\,(a+b\,x)}{(b\,c-a\,d)\,i^2\,(c+d\,x)}-\frac{2\,B^2\,n\,(a+b\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)\,i^2\,(c+d\,x)}+\frac{(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)\,i^2\,(c+d\,x)}$$

Result (type 4, 514 leaves, 24 steps):

$$-\frac{2\,B^2\,n^2}{d\,i^2\,(c+d\,x)}-\frac{2\,b\,B^2\,n^2\,\text{Log}[a+b\,x]}{d\,(b\,c-a\,d)\,i^2}-\frac{b\,B^2\,n^2\,\text{Log}[a+b\,x]^2}{d\,(b\,c-a\,d)\,i^2}+\frac{2\,B\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{d\,i^2\,(c+d\,x)}+\frac{2\,b\,B\,n\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{d\,(b\,c-a\,d)\,i^2}-\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{d\,i^2\,(c+d\,x)}+\frac{2\,b\,B^2\,n^2\,\text{Log}[c+d\,x]}{d\,(b\,c-a\,d)\,i^2}+\frac{2\,b\,B^2\,n^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\text{Log}[c+d\,x]}{d\,(b\,c-a\,d)\,i^2}-\frac{2\,b\,B\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}[c+d\,x]}{d\,(b\,c-a\,d)\,i^2}-\frac{b\,B^2\,n^2\,\text{Log}[c+d\,x]^2}{d\,(b\,c-a\,d)\,i^2}+\frac{2\,b\,B^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)\,i^2}+\frac{2\,b\,B^2\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)\,i^2}+\frac{2\,b\,B^2\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,(b\,c-a\,d)\,i^2}$$

Problem 198: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 231 leaves, 7 steps):

$$\frac{2\,A\,B\,d\,n\,(a+b\,x)}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}-\frac{2\,B^2\,d\,n^2\,(a+b\,x)}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}+\frac{2\,B^2\,d\,n\,(a+b\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}-\frac{d\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}+\frac{b\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^3}{3\,B\,(b\,c-a\,d)^2\,g\,i^2\,n}$$

Result (type 4, 1803 leaves, 83 steps):

$$\frac{2\,B^2\,n^2}{(b\,c-a\,d)\,g\,i^2\,(c+d\,x)}+\frac{2\,b\,B^2\,n^2\,\mathrm{Log}[a+b\,x]}{(b\,c-a\,d)^2\,g\,i^2}-\frac{A\,b\,B\,n\,\mathrm{Log}[a+b\,x]^2}{(b\,c-a\,d)^2\,g\,i^2}+\frac{b\,B^2\,n^2\,\mathrm{Log}[a+b\,x]^2}{(b\,c-a\,d)^2\,g\,i^2}-$$

$$\frac{b\,B^2\,\mathrm{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)^2\,g\,i^2}-\frac{b\,B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)^2\,g\,i^2}-$$

$$\frac{2\,B\,n\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)\,g\,i^2\,(c+d\,x)}-\frac{2\,b\,B\,n\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^2\,g\,i^2}+$$

$$\frac{\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)\,g\,i^2\,(c+d\,x)}+\frac{b\,\mathrm{Log}[a+b\,x]\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^2\,g\,i^2}-\frac{2\,b\,B^2\,n^2\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g\,i^2}+$$

$$\frac{2\,A\,b\,B\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g\,i^2}-\frac{2\,b\,B^2\,n^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g\,i^2}+$$

$$\frac{b\,B^2\,\mathrm{Log}\left[(a+b\,x)^n\right]^2\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g\,i^2}+\frac{2\,b\,B\,n\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g\,i^2}-$$

$$\frac{b\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^2\,g\,i^2}-\frac{A\,b\,B\,n\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^2\,g\,i^2}+\frac{b\,B^2\,n^2\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^2\,g\,i^2}+$$

$$\frac{b\,B^2\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^2\,g\,i^2}-\frac{b\,B^2\,n\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\mathrm{Log}[c+d\,x]^2}{(b\,c-a\,d)^2\,g\,i^2}-\frac{b\,B^2\,n^2\,\mathrm{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)^2\,g\,i^2}+$$

$$\frac{2\,A\,b\,B\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}-\frac{2\,b\,B^2\,n^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}-$$

$$\frac{b\,B^2\,\mathrm{Log}\left[(a+b\,x)^n\right]^2\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}+\frac{2\,b\,B^2\,n\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}[c+d\,x]\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]}{(b\,c-a\,d)^2\,g\,i^2}+$$

$$\frac{b\,B^2\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)^2\,g\,i^2}-\frac{b\,B^2\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)^2\,g\,i^2}-\frac{1}{(b\,c-a\,d)^2\,g\,i^2}$$

$$2\,b\,B^2\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]\,\left(\mathrm{Log}\left[(a+b\,x)^n\right]-\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\mathrm{Log}\left[(c+d\,x)^{-n}\right]\right)+$$

$$\frac{2\,A\,b\,B\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}-\frac{2\,b\,B^2\,n^2\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}-$$

$$\frac{2\,b\,B^2\,n\,\mathrm{Log}\left[(a+b\,x)^n\right]\,\mathrm{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}+\frac{2\,A\,b\,B\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}-$$

$$\frac{2\,b\,B^2\,n^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}+\frac{2\,b\,B^2\,n\,\mathrm{Log}\left[(c+d\,x)^{-n}\right]\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}-\frac{1}{(b\,c-a\,d)^2\,g\,i^2}$$

$$2\,b\,B^2\,n\,\left(\mathrm{Log}\left[(a+b\,x)^n\right]-\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\mathrm{Log}\left[(c+d\,x)^{-n}\right]\right)\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$\frac{2\,b\,B^2\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{PolyLog}\left[2,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^2\,g\,i^2}+\frac{2\,b\,B^2\,n^2\,\text{PolyLog}\left[3,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}+$$
$$\frac{2\,b\,B^2\,n^2\,\text{PolyLog}\left[3,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^2\,g\,i^2}+\frac{2\,b\,B^2\,n^2\,\text{PolyLog}\left[3,\,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^2\,g\,i^2}$$

Problem 199: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 392 leaves, 10 steps):

$$-\frac{2\,A\,B\,d^2\,n\,(a+b\,x)}{(b\,c-a\,d)^3\,g^2\,i^2\,(c+d\,x)}+\frac{2\,B^2\,d^2\,n^2\,(a+b\,x)}{(b\,c-a\,d)^3\,g^2\,i^2\,(c+d\,x)}-$$
$$\frac{2\,b^2\,B^2\,n^2\,(c+d\,x)}{(b\,c-a\,d)^3\,g^2\,i^2\,(a+b\,x)}-\frac{2\,B^2\,d^2\,n\,(a+b\,x)\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)^3\,g^2\,i^2\,(c+d\,x)}-$$
$$\frac{2\,b^2\,B\,n\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^3\,g^2\,i^2\,(a+b\,x)}+\frac{d^2\,(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^3\,g^2\,i^2\,(c+d\,x)}-$$
$$\frac{b^2\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^3\,g^2\,i^2\,(a+b\,x)}-\frac{2\,b\,d\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^3}{3\,B\,(b\,c-a\,d)^3\,g^2\,i^2\,n}$$

Result (type 4, 1621 leaves, 107 steps):

$$-\frac{2\,b\,B^2\,n^2}{(b\,c-a\,d)^2\,g^2\,i^2\,(a+b\,x)}-\frac{2\,B^2\,d\,n^2}{(b\,c-a\,d)^2\,g^2\,i^2\,(c+d\,x)}-\frac{4\,b\,B^2\,d\,n^2\,\text{Log}[a+b\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}+$$
$$\frac{2\,A\,b\,B\,d\,n\,\text{Log}[a+b\,x]^2}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{2\,b\,B^2\,d\,\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)^3\,g^2\,i^2}+$$
$$\frac{2\,b\,B^2\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{2\,b\,B\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^2\,g^2\,i^2\,(a+b\,x)}+$$
$$\frac{2\,B\,d\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^2\,g^2\,i^2\,(c+d\,x)}-\frac{b\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^2\,g^2\,i^2\,(a+b\,x)}-\frac{d\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^2\,g^2\,i^2\,(c+d\,x)}-$$
$$\frac{2\,b\,d\,\text{Log}[a+b\,x]\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{4\,b\,B^2\,d\,n^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}-$$
$$\frac{4\,A\,b\,B\,d\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{2\,b\,B^2\,d\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}+$$

$$\frac{2\,b\,d\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\text{Log}[c+d\,x]}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{2\,A\,b\,B\,d\,n\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{2\,b\,B^2\,d\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{2\,b\,B^2\,d\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^3\,g^2\,i^2}+$$

$$\frac{2\,b\,B^2\,d\,n^2\,\text{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)^3\,g^2\,i^2}-\frac{4\,A\,b\,B\,d\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}+$$

$$\frac{2\,b\,B^2\,d\,\text{Log}\left[(a+b\,x)^n\right]^2\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{4\,b\,B^2\,d\,n\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{2\,b\,B^2\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{2\,b\,B^2\,d\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\text{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{1}{(b\,c-a\,d)^3\,g^2\,i^2}$$

$$4\,b\,B^2\,d\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\text{Log}[c+d\,x]\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)-$$

$$\frac{4\,A\,b\,B\,d\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{4\,b\,B^2\,d\,n\,\text{Log}\left[(a+b\,x)^n\right]\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{4\,A\,b\,B\,d\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{4\,b\,B^2\,d\,n\,\text{Log}\left[(c+d\,x)^{-n}\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}+\frac{1}{(b\,c-a\,d)^3\,g^2\,i^2}$$

$$4\,b\,B^2\,d\,n\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$\frac{4\,b\,B^2\,d\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{4\,b\,B^2\,d\,n^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-$$

$$\frac{4\,b\,B^2\,d\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}-\frac{4\,b\,B^2\,d\,n^2\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^3\,g^2\,i^2}$$

Problem 200: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 560 leaves, 12 steps):

$$\frac{2 A B d^3 n (a+b x)}{(b c-a d)^4 g^3 i^2 (c+d x)}-\frac{2 B^2 d^3 n^2 (a+b x)}{(b c-a d)^4 g^3 i^2 (c+d x)}+\frac{6 b^2 B^2 d n^2 (c+d x)}{(b c-a d)^4 g^3 i^2 (a+b x)}-\frac{b^3 B^2 n^2 (c+d x)^2}{4 (b c-a d)^4 g^3 i^2 (a+b x)^2}+\frac{2 B^2 d^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d)^4 g^3 i^2 (c+d x)}+\frac{6 b^2 B d n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^3 i^2 (a+b x)}-\frac{b^3 B n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^4 g^3 i^2 (a+b x)^2}-\frac{d^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^3 i^2 (c+d x)}+\frac{3 b^2 d (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^3 i^2 (a+b x)}-\frac{b^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^4 g^3 i^2 (a+b x)^2}+\frac{b d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{B (b c-a d)^4 g^3 i^2 n}$$

Result (type 4, 2207 leaves, 135 steps):

$$-\frac{b B^2 n^2}{4 (b c-a d)^2 g^3 i^2 (a+b x)^2}+\frac{11 b B^2 d n^2}{2 (b c-a d)^3 g^3 i^2 (a+b x)}+\frac{2 B^2 d^2 n^2}{(b c-a d)^3 g^3 i^2 (c+d x)}+\frac{15 b B^2 d^2 n^2 \text{Log}[a+b x]}{2 (b c-a d)^4 g^3 i^2}-\frac{3 A b B d^2 n \text{Log}[a+b x]^2}{(b c-a d)^4 g^3 i^2}-\frac{3 b B^2 d^2 n^2 \text{Log}[a+b x]^2}{2 (b c-a d)^4 g^3 i^2}-\frac{3 b B^2 d^2 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^4 g^3 i^2}-\frac{3 b B^2 d^2 \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^4 g^3 i^2}-\frac{b B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^2 g^3 i^2 (a+b x)^2}+\frac{5 b B d n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^3 i^2 (a+b x)}-\frac{2 B d^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^3 i^2 (c+d x)}+\frac{3 b B d^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^3 i^2}-\frac{b \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^2 g^3 i^2 (a+b x)^2}+\frac{2 b d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g^3 i^2 (a+b x)}+\frac{d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g^3 i^2 (c+d x)}+\frac{3 b d^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^3 i^2}-\frac{15 b B^2 d^2 n^2 \text{Log}[c+d x]}{2 (b c-a d)^4 g^3 i^2}+\frac{6 A b B d^2 n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^4 g^3 i^2}+\frac{3 b B^2 d^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^4 g^3 i^2}+\frac{3 b B^2 d^2 \text{Log}\left[(a+b x)^n\right]^2 \text{Log}[c+d x]}{(b c-a d)^4 g^3 i^2}-\frac{3 b B d^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{(b c-a d)^4 g^3 i^2}-\frac{3 b d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}[c+d x]}{(b c-a d)^4 g^3 i^2}-\frac{3 A b B d^2 n \text{Log}[c+d x]^2}{(b c-a d)^4 g^3 i^2}-$$

$$\frac{3\,b\,B^2\,d^2\,n^2\,\text{Log}[c+d\,x]^2}{2\,(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B^2\,d^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^3\,i^2}-$$

$$\frac{3\,b\,B^2\,d^2\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}[c+d\,x]^2}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{b\,B^2\,d^2\,n^2\,\text{Log}[c+d\,x]^3}{(b\,c-a\,d)^4\,g^3\,i^2}+$$

$$\frac{6\,A\,b\,B\,d^2\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B^2\,d^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}-$$

$$\frac{3\,b\,B^2\,d^2\,\text{Log}\left[(a+b\,x)^n\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{6\,b\,B^2\,d^2\,n\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+$$

$$\frac{3\,b\,B^2\,d^2\,\text{Log}[a+b\,x]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{3\,b\,B^2\,d^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{1}{(b\,c-a\,d)^4\,g^3\,i^2}$$

$$6\,b\,B^2\,d^2\,n\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]\,\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)+$$

$$\frac{6\,A\,b\,B\,d^2\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B^2\,d^2\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}-$$

$$\frac{6\,b\,B^2\,d^2\,n\,\text{Log}\left[(a+b\,x)^n\right]\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+$$

$$\frac{6\,A\,b\,B\,d^2\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{3\,b\,B^2\,d^2\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+$$

$$\frac{6\,b\,B^2\,d^2\,n\,\text{Log}\left[(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}-\frac{1}{(b\,c-a\,d)^4\,g^3\,i^2}$$

$$6\,b\,B^2\,d^2\,n\,\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$\frac{6\,b\,B^2\,d^2\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{6\,b\,B^2\,d^2\,n^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+$$

$$\frac{6\,b\,B^2\,d^2\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}+\frac{6\,b\,B^2\,d^2\,n^2\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4\,g^3\,i^2}$$

Problem 201: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^4\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 729 leaves, 14 steps):

$$-\frac{2\,A\,B\,d^4\,n\,(a+b\,x)}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)}+\frac{2\,B^2\,d^4\,n^2\,(a+b\,x)}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)}-\frac{12\,b^2\,B^2\,d^2\,n^2\,(c+d\,x)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)}+$$

$$\frac{b^3\,B^2\,d\,n^2\,(c+d\,x)^2}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^2}-\frac{2\,b^4\,B^2\,n^2\,(c+d\,x)^3}{27\,(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^3}-\frac{2\,B^2\,d^4\,n\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)}-$$

$$\frac{12\,b^2\,B\,d^2\,n\,(c+d\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)}+\frac{2\,b^3\,B\,d\,n\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^2}-$$

$$\frac{2\,b^4\,B\,n\,(c+d\,x)^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{9\,(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^3}+\frac{d^4\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)}-$$

$$\frac{6\,b^2\,d^2\,(c+d\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)}+\frac{2\,b^3\,d\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^2}-$$

$$\frac{b^4\,(c+d\,x)^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^3}-\frac{4\,b\,d^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^3}{3\,B\,(b\,c-a\,d)^5\,g^4\,i^2\,n}$$

Result (type 4, 2368 leaves, 167 steps):

$$-\frac{2\,b\,B^2\,n^2}{27\,(b\,c-a\,d)^2\,g^4\,i^2\,(a+b\,x)^3}+\frac{7\,b\,B^2\,d\,n^2}{9\,(b\,c-a\,d)^3\,g^4\,i^2\,(a+b\,x)^2}-\frac{92\,b\,B^2\,d^2\,n^2}{9\,(b\,c-a\,d)^4\,g^4\,i^2\,(a+b\,x)}-$$

$$\frac{2\,B^2\,d^3\,n^2}{(b\,c-a\,d)^4\,g^4\,i^2\,(c+d\,x)}-\frac{110\,b\,B^2\,d^3\,n^2\,\mathrm{Log}[a+b\,x]}{9\,(b\,c-a\,d)^5\,g^4\,i^2}+\frac{4\,A\,b\,B\,d^3\,n\,\mathrm{Log}[a+b\,x]^2}{(b\,c-a\,d)^5\,g^4\,i^2}+$$

$$\frac{10\,b\,B^2\,d^3\,n^2\,\mathrm{Log}[a+b\,x]^2}{3\,(b\,c-a\,d)^5\,g^4\,i^2}+\frac{4\,b\,B^2\,d^3\,\mathrm{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)^5\,g^4\,i^2}+$$

$$\frac{4\,b\,B^2\,d^3\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2}{(b\,c-a\,d)^5\,g^4\,i^2}-\frac{2\,b\,B\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{9\,(b\,c-a\,d)^2\,g^4\,i^2\,(a+b\,x)^3}+$$

$$\frac{4\,b\,B\,d\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,c-a\,d)^3\,g^4\,i^2\,(a+b\,x)^2}-\frac{26\,b\,B\,d^2\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,c-a\,d)^4\,g^4\,i^2\,(a+b\,x)}+$$

$$\frac{2\,B\,d^3\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^4\,g^4\,i^2\,(c+d\,x)}-\frac{20\,b\,B\,d^3\,n\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,c-a\,d)^5\,g^4\,i^2}-$$

$$\frac{b\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,(b\,c-a\,d)^2\,g^4\,i^2\,(a+b\,x)^3}+\frac{b\,d\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^3\,g^4\,i^2\,(a+b\,x)^2}-\frac{3\,b\,d^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^4\,g^4\,i^2\,(a+b\,x)}-$$

$$\frac{d^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^4\,g^4\,i^2\,(c+d\,x)}-\frac{4\,b\,d^3\,\mathrm{Log}[a+b\,x]\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^5\,g^4\,i^2}+$$

$$\frac{110\,b\,B^2\,d^3\,n^2\,\mathrm{Log}[c+d\,x]}{9\,(b\,c-a\,d)^5\,g^4\,i^2}-\frac{8\,A\,b\,B\,d^3\,n\,\mathrm{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\mathrm{Log}[c+d\,x]}{(b\,c-a\,d)^5\,g^4\,i^2}-$$

$$\frac{20\, b\, B^2\, d^3\, n^2\, \text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\, \text{Log}[c+d\,x]}{3\,(b\,c-a\,d)^5\, g^4\, i^2} - \frac{4\, b\, B^2\, d^3\, \text{Log}\left[(a+b\,x)^n\right]^2\, \text{Log}[c+d\,x]}{(b\,c-a\,d)^5\, g^4\, i^2} +$$

$$\frac{20\, b\, B\, d^3\, n\, \left(A+B\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\, \text{Log}[c+d\,x]}{3\,(b\,c-a\,d)^5\, g^4\, i^2} + \frac{4\, b\, d^3\, \left(A+B\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\, \text{Log}[c+d\,x]}{(b\,c-a\,d)^5\, g^4\, i^2} +$$

$$\frac{4\, A\, b\, B\, d^3\, n\, \text{Log}[c+d\,x]^2}{(b\,c-a\,d)^5\, g^4\, i^2} + \frac{10\, b\, B^2\, d^3\, n^2\, \text{Log}[c+d\,x]^2}{3\,(b\,c-a\,d)^5\, g^4\, i^2} - \frac{4\, b\, B^2\, d^3\, n^2\, \text{Log}[a+b\,x]\, \text{Log}[c+d\,x]^2}{(b\,c-a\,d)^5\, g^4\, i^2} +$$

$$\frac{4\, b\, B^2\, d^3\, n\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\, \text{Log}[c+d\,x]^2}{(b\,c-a\,d)^5\, g^4\, i^2} + \frac{4\, b\, B^2\, d^3\, n^2\, \text{Log}[c+d\,x]^3}{3\,(b\,c-a\,d)^5\, g^4\, i^2} -$$

$$\frac{8\, A\, b\, B\, d^3\, n\, \text{Log}[a+b\,x]\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\, g^4\, i^2} - \frac{20\, b\, B^2\, d^3\, n^2\, \text{Log}[a+b\,x]\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^5\, g^4\, i^2} +$$

$$\frac{4\, b\, B^2\, d^3\, \text{Log}\left[(a+b\,x)^n\right]^2\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\, g^4\, i^2} - \frac{8\, b\, B^2\, d^3\, n\, \text{Log}[a+b\,x]\, \text{Log}[c+d\,x]\, \text{Log}\left[(c+d\,x)^{-n}\right]}{(b\,c-a\,d)^5\, g^4\, i^2} -$$

$$\frac{4\, b\, B^2\, d^3\, \text{Log}[a+b\,x]\, \text{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)^5\, g^4\, i^2} + \frac{4\, b\, B^2\, d^3\, \text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\, \text{Log}\left[(c+d\,x)^{-n}\right]^2}{(b\,c-a\,d)^5\, g^4\, i^2} + \frac{1}{(b\,c-a\,d)^5\, g^4\, i^2}$$

$$8\, b\, B^2\, d^3\, n\, \text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\, \text{Log}[c+d\,x]\, \left(\text{Log}\left[(a+b\,x)^n\right] - \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + \text{Log}\left[(c+d\,x)^{-n}\right]\right) -$$

$$\frac{8\, A\, b\, B\, d^3\, n\, \text{PolyLog}\left[2, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\, g^4\, i^2} - \frac{20\, b\, B^2\, d^3\, n^2\, \text{PolyLog}\left[2, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^5\, g^4\, i^2} +$$

$$\frac{8\, b\, B^2\, d^3\, n\, \text{Log}\left[(a+b\,x)^n\right]\, \text{PolyLog}\left[2, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\, g^4\, i^2} -$$

$$\frac{8\, A\, b\, B\, d^3\, n\, \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\, g^4\, i^2} - \frac{20\, b\, B^2\, d^3\, n^2\, \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,(b\,c-a\,d)^5\, g^4\, i^2} -$$

$$\frac{8\, b\, B^2\, d^3\, n\, \text{Log}\left[(c+d\,x)^{-n}\right]\, \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\, g^4\, i^2} + \frac{1}{(b\,c-a\,d)^5\, g^4\, i^2}$$

$$8\, b\, B^2\, d^3\, n\, \left(\text{Log}\left[(a+b\,x)^n\right] - \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + \text{Log}\left[(c+d\,x)^{-n}\right]\right)\, \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right] -$$

$$\frac{8\, b\, B^2\, d^3\, n\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\, \text{PolyLog}\left[2, 1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^5\, g^4\, i^2} - \frac{8\, b\, B^2\, d^3\, n^2\, \text{PolyLog}\left[3, -\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\, g^4\, i^2} -$$

$$\frac{8\, b\, B^2\, d^3\, n^2\, \text{PolyLog}\left[3, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^5\, g^4\, i^2} - \frac{8\, b\, B^2\, d^3\, n^2\, \text{PolyLog}\left[3, 1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^5\, g^4\, i^2}$$

Problem 202: Result valid but suboptimal antiderivative.

$$\int \frac{(a g+b g x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(c i+d i x)^3} \, dx$$

Optimal (type 4, 676 leaves, 14 steps):

$$\frac{B^2 (b c-a d) g^3 n^2 (a+b x)^2}{4 d^2 i^3 (c+d x)^2}-\frac{4 A b B (b c-a d) g^3 n (a+b x)}{d^3 i^3 (c+d x)}+\frac{4 b B^2 (b c-a d) g^3 n^2 (a+b x)}{d^3 i^3 (c+d x)}-\frac{4 b B^2 (b c-a d) g^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^3 i^3 (c+d x)}-\frac{B (b c-a d) g^3 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^2 i^3 (c+d x)^2}+\frac{b^2 g^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i^3}+\frac{(b c-a d) g^3 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d^2 i^3 (c+d x)^2}+\frac{2 b (b c-a d) g^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i^3 (c+d x)}+\frac{2 b^2 B (b c-a d) g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^4 i^3}+\frac{3 b^2 (b c-a d) g^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^4 i^3}+\frac{2 b^2 B^2 (b c-a d) g^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}+\frac{6 b^2 B (b c-a d) g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}-\frac{6 b^2 B^2 (b c-a d) g^3 n^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}$$

Result (type 4, 2026 leaves, 117 steps):

$$\frac{B^2 (b c-a d)^3 g^3 n^2}{4 d^4 i^3 (c+d x)^2}-\frac{9 b B^2 (b c-a d)^2 g^3 n^2}{2 d^4 i^3 (c+d x)}-\frac{9 b^2 B^2 (b c-a d) g^3 n^2 \text{Log}[a+b x]}{2 d^4 i^3}-\frac{a b^2 B^2 g^3 n^2 \text{Log}[a+b x]^2}{d^3 i^3}-\frac{5 b^2 B^2 (b c-a d) g^3 n^2 \text{Log}[a+b x]^2}{2 d^4 i^3}-\frac{B (b c-a d)^3 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^4 i^3 (c+d x)^2}+\frac{5 b B (b c-a d)^2 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^4 i^3 (c+d x)}+\frac{2 a b^2 B g^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^3 i^3}+\frac{5 b^2 B (b c-a d) g^3 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^4 i^3}+\frac{b^3 g^3 x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i^3}+$$

$$\frac{(b c-a d)^3 g^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d^4 i^3 (c+d x)^2}-\frac{3 b (b c-a d)^2 g^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^4 i^3 (c+d x)}+$$

$$\frac{9 b^2 B^2 (b c-a d) g^3 n^2 \operatorname{Log}[c+d x]}{2 d^4 i^3}+\frac{6 A b^2 B (b c-a d) g^3 n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d^4 i^3}+$$

$$\frac{2 b^3 B^2 c g^3 n^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d^4 i^3}+\frac{5 b^2 B^2 (b c-a d) g^3 n^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{d^4 i^3}+$$

$$\frac{3 b^2 B^2 (b c-a d) g^3 \operatorname{Log}\left[(a+b x)^n\right]^2 \operatorname{Log}[c+d x]}{d^4 i^3}-\frac{2 b^3 B c g^3 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{d^4 i^3}-$$

$$\frac{5 b^2 B (b c-a d) g^3 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{d^4 i^3}-$$

$$\frac{3 b^2 (b c-a d) g^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \operatorname{Log}[c+d x]}{d^4 i^3}-$$

$$\frac{3 A b^2 B (b c-a d) g^3 n \operatorname{Log}[c+d x]^2}{d^4 i^3}-\frac{b^3 B^2 c g^3 n^2 \operatorname{Log}[c+d x]^2}{d^4 i^3}-$$

$$\frac{5 b^2 B^2 (b c-a d) g^3 n^2 \operatorname{Log}[c+d x]^2}{2 d^4 i^3}+\frac{3 b^2 B^2 (b c-a d) g^3 n^2 \operatorname{Log}[a+b x] \operatorname{Log}[c+d x]^2}{d^4 i^3}-$$

$$\frac{3 b^2 B^2 (b c-a d) g^3 n \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \operatorname{Log}[c+d x]^2}{d^4 i^3}-\frac{b^2 B^2 (b c-a d) g^3 n^2 \operatorname{Log}[c+d x]^3}{d^4 i^3}+$$

$$\frac{2 a b^2 B^2 g^3 n^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}+\frac{5 b^2 B^2 (b c-a d) g^3 n^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^4 i^3}-$$

$$\frac{3 b^2 B^2 (b c-a d) g^3 \operatorname{Log}\left[(a+b x)^n\right]^2 \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^4 i^3}+$$

$$\frac{6 b^2 B^2 (b c-a d) g^3 n \operatorname{Log}[a+b x] \operatorname{Log}[c+d x] \operatorname{Log}\left[(c+d x)^{-n}\right]}{d^4 i^3}+$$

$$\frac{3 b^2 B^2 (b c-a d) g^3 \operatorname{Log}[a+b x] \operatorname{Log}\left[(c+d x)^{-n}\right]^2}{d^4 i^3}-$$

$$\frac{3 b^2 B^2 (b c-a d) g^3 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[(c+d x)^{-n}\right]^2}{d^4 i^3}-\frac{1}{d^4 i^3} 6 b^2 B^2 (b c-a d) g^3 n$$

$$\operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x] \left(\operatorname{Log}\left[(a+b x)^n\right]-\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\operatorname{Log}\left[(c+d x)^{-n}\right]\right)+$$

$$\frac{2 a b^2 B^2 g^3 n^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^3 i^3}+\frac{5 b^2 B^2 (b c-a d) g^3 n^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^4 i^3}-$$

$$\frac{6 b^2 B^2 (b c-a d) g^3 n \operatorname{Log}\left[(a+b x)^n\right] \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^4 i^3}+$$

$$\frac{6 A b^2 B (b c-a d) g^3 n \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^4 i^3}+\frac{2 b^3 B^2 c g^3 n^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^4 i^3}+$$

$$\frac{5\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}+$$
$$\frac{6\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,n\,\text{Log}\left[(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}-\frac{1}{d^4\,i^3}6\,b^2\,B^2\,(b\,c-a\,d)\,g^3$$
$$n\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$
$$\frac{6\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,n^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}+\frac{6\,b^2\,B^2\,(b\,c-a\,d)\,g^3\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4\,i^3}$$

Problem 203: Result valid but suboptimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 4, 441 leaves, 11 steps):

$$-\frac{B^2\,g^2\,n^2\,(a+b\,x)^2}{4\,d\,i^3\,(c+d\,x)^2}+\frac{2\,A\,b\,B\,g^2\,n\,(a+b\,x)}{d^2\,i^3\,(c+d\,x)}-\frac{2\,b\,B^2\,g^2\,n^2\,(a+b\,x)}{d^2\,i^3\,(c+d\,x)}+\frac{2\,b\,B^2\,g^2\,n\,(a+b\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d^2\,i^3\,(c+d\,x)}+$$
$$\frac{B\,g^2\,n\,(a+b\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,d\,i^3\,(c+d\,x)^2}-\frac{g^2\,(a+b\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,d\,i^3\,(c+d\,x)^2}-$$
$$\frac{b\,g^2\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{d^2\,i^3\,(c+d\,x)}-\frac{b^2\,g^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{d^3\,i^3}-$$
$$\frac{2\,b^2\,B\,g^2\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^3\,i^3}+\frac{2\,b^2\,B^2\,g^2\,n^2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^3\,i^3}$$

Result (type 4, 1435 leaves, 97 steps):

$$-\frac{B^2 (b c-a d)^2 g^2 n^2}{4 d^3 i^3 (c+d x)^2}+\frac{5 b B^2 (b c-a d) g^2 n^2}{2 d^3 i^3 (c+d x)}+\frac{5 b^2 B^2 g^2 n^2 \text{Log}[a+b x]}{2 d^3 i^3}+\frac{3 b^2 B^2 g^2 n^2 \text{Log}[a+b x]^2}{2 d^3 i^3}+$$

$$\frac{B (b c-a d)^2 g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^3 i^3 (c+d x)^2}-\frac{3 b B (b c-a d) g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^3 i^3 (c+d x)}-$$

$$\frac{3 b^2 B g^2 n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^3 i^3}-\frac{(b c-a d)^2 g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d^3 i^3 (c+d x)^2}+$$

$$\frac{2 b (b c-a d) g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i^3 (c+d x)}-\frac{5 b^2 B^2 g^2 n^2 \text{Log}[c+d x]}{2 d^3 i^3}-$$

$$\frac{2 A b^2 B g^2 n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^3 i^3}-\frac{3 b^2 B^2 g^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d^3 i^3}-$$

$$\frac{b^2 B^2 g^2 \text{Log}\left[(a+b x)^n\right]^2 \text{Log}[c+d x]}{d^3 i^3}+\frac{3 b^2 B g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{d^3 i^3}+$$

$$\frac{b^2 g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}[c+d x]}{d^3 i^3}+\frac{A b^2 B g^2 n \text{Log}[c+d x]^2}{d^3 i^3}+\frac{3 b^2 B^2 g^2 n^2 \text{Log}[c+d x]^2}{2 d^3 i^3}-$$

$$\frac{b^2 B^2 g^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x]^2}{d^3 i^3}+\frac{b^2 B^2 g^2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]^2}{d^3 i^3}+$$

$$\frac{b^2 B^2 g^2 n^2 \text{Log}[c+d x]^3}{3 d^3 i^3}-\frac{3 b^2 B^2 g^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}+$$

$$\frac{b^2 B^2 g^2 \text{Log}\left[(a+b x)^n\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}-\frac{2 b^2 B^2 g^2 n \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[(c+d x)^{-n}\right]}{d^3 i^3}-$$

$$\frac{b^2 B^2 g^2 \text{Log}[a+b x] \text{Log}\left[(c+d x)^{-n}\right]^2}{d^3 i^3}+\frac{b^2 B^2 g^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^{-n}\right]^2}{d^3 i^3}+\frac{1}{d^3 i^3}$$

$$2 b^2 B^2 g^2 n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x] \left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right)-$$

$$\frac{3 b^2 B^2 g^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^3 i^3}+\frac{2 b^2 B^2 g^2 n \text{Log}\left[(a+b x)^n\right] \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d^3 i^3}-$$

$$\frac{2 A b^2 B g^2 n \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}-\frac{3 b^2 B^2 g^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}-$$

$$\frac{2 b^2 B^2 g^2 n \text{Log}\left[(c+d x)^{-n}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}+\frac{1}{d^3 i^3}$$

$$2 b^2 B^2 g^2 n \left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-$$

$$\frac{2 b^2 B^2 g^2 n^2 \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{d^3 i^3}-\frac{2 b^2 B^2 g^2 n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{d^3 i^3}$$

Problem 204: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{(a g + b g x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(c i + d i x)^3} \, dx$$

Optimal (type 3, 151 leaves, 3 steps):

$$\frac{B^2 g n^2 (a + b x)^2}{4 (b c - a d) i^3 (c + d x)^2} - \frac{B g n (a + b x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c - a d) i^3 (c + d x)^2} + \frac{g (a + b x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c - a d) i^3 (c + d x)^2}$$

Result (type 4, 686 leaves, 54 steps):

$$\frac{B^2 (b c - a d) g n^2}{4 d^2 i^3 (c + d x)^2} - \frac{b B^2 g n^2}{2 d^2 i^3 (c + d x)} - \frac{b^2 B^2 g n^2 \operatorname{Log}[a + b x]}{2 d^2 (b c - a d) i^3} -$$
$$\frac{b^2 B^2 g n^2 \operatorname{Log}[a + b x]^2}{2 d^2 (b c - a d) i^3} - \frac{B (b c - a d) g n \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^2 i^3 (c + d x)^2} +$$
$$\frac{b B g n \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^2 i^3 (c + d x)} + \frac{b^2 B g n \operatorname{Log}[a + b x] \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d^2 (b c - a d) i^3} +$$
$$\frac{(b c - a d) g \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d^2 i^3 (c + d x)^2} - \frac{b g \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^2 i^3 (c + d x)} + \frac{b^2 B^2 g n^2 \operatorname{Log}[c + d x]}{2 d^2 (b c - a d) i^3} +$$
$$\frac{b^2 B^2 g n^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c + d x]}{d^2 (b c - a d) i^3} - \frac{b^2 B g n \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c + d x]}{d^2 (b c - a d) i^3} -$$
$$\frac{b^2 B^2 g n^2 \operatorname{Log}[c + d x]^2}{2 d^2 (b c - a d) i^3} + \frac{b^2 B^2 g n^2 \operatorname{Log}[a + b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2 (b c - a d) i^3} +$$
$$\frac{b^2 B^2 g n^2 \operatorname{PolyLog}\left[2, -\frac{d (a+b x)}{b c-a d}\right]}{d^2 (b c - a d) i^3} + \frac{b^2 B^2 g n^2 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{d^2 (b c - a d) i^3}$$

Problem 205: Result unnecessarily involves higher level functions.

$$\int \frac{\left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(c i + d i x)^3} \, dx$$

Optimal (type 3, 317 leaves, 8 steps):

$$-\frac{B^2 d n^2 (a+b x)^2}{4 (b c-a d)^2 i^3 (c+d x)^2}-\frac{2 A b B n (a+b x)}{(b c-a d)^2 i^3 (c+d x)}+\frac{2 b B^2 n^2 (a+b x)}{(b c-a d)^2 i^3 (c+d x)}-\frac{2 b B^2 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d)^2 i^3 (c+d x)}+\frac{B d n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^2 i^3 (c+d x)^2}-\frac{d (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^2 i^3 (c+d x)^2}+\frac{b (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^2 i^3 (c+d x)}$$

Result (type 4, 626 leaves, 28 steps):

$$-\frac{B^2 n^2}{4 d i^3 (c+d x)^2}-\frac{3 b B^2 n^2}{2 d (b c-a d) i^3 (c+d x)}-\frac{3 b^2 B^2 n^2 \text{Log}[a+b x]}{2 d (b c-a d)^2 i^3}-\frac{b^2 B^2 n^2 \text{Log}[a+b x]^2}{2 d (b c-a d)^2 i^3}+\frac{B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d i^3 (c+d x)^2}+\frac{b B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d (b c-a d) i^3 (c+d x)}+\frac{b^2 B n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d (b c-a d)^2 i^3}-\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d i^3 (c+d x)^2}+\frac{3 b^2 B^2 n^2 \text{Log}[c+d x]}{2 d (b c-a d)^2 i^3}+\frac{b^2 B^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{d (b c-a d)^2 i^3}-\frac{b^2 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{d (b c-a d)^2 i^3}-\frac{b^2 B^2 n^2 \text{Log}[c+d x]^2}{2 d (b c-a d)^2 i^3}+\frac{b^2 B^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d (b c-a d)^2 i^3}+\frac{b^2 B^2 n^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{d (b c-a d)^2 i^3}+\frac{b^2 B^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{d (b c-a d)^2 i^3}$$

Problem 206: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x) (c i+d i x)^3} \, dx$$

Optimal (type 3, 402 leaves, 15 steps):

$$\frac{B^2 d^2 n^2 (a+b x)^2}{4 (b c-a d)^3 g i^3 (c+d x)^2}+\frac{4 A b B d n (a+b x)}{(b c-a d)^3 g i^3 (c+d x)}-\frac{4 b B^2 d n^2 (a+b x)}{(b c-a d)^3 g i^3 (c+d x)}+\frac{4 b B^2 d n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d)^3 g i^3 (c+d x)}-\frac{B d^2 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^3 g i^3 (c+d x)^2}+\frac{d^2 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^3 g i^3 (c+d x)^2}-\frac{2 b d (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g i^3 (c+d x)}+\frac{b^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{3 B (b c-a d)^3 g i^3 n}$$

Result (type 4, 2025 leaves, 111 steps):

$$\frac{B^2 n^2}{4 (b c-a d) g i^3 (c+d x)^2}+\frac{7 b B^2 n^2}{2 (b c-a d)^2 g i^3 (c+d x)}+\frac{7 b^2 B^2 n^2 \text{Log}[a+b x]}{2 (b c-a d)^3 g i^3}-\frac{A b^2 B n \text{Log}[a+b x]^2}{(b c-a d)^3 g i^3}+\frac{3 b^2 B^2 n^2 \text{Log}[a+b x]^2}{2 (b c-a d)^3 g i^3}-\frac{b^2 B^2 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^3 g i^3}-\frac{b^2 B^2 \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^3 g i^3}-\frac{B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d) g i^3 (c+d x)^2}-\frac{3 b B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^2 g i^3 (c+d x)}-\frac{3 b^2 B n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g i^3}+\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d) g i^3 (c+d x)^2}+\frac{b \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^2 g i^3 (c+d x)}+\frac{b^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g i^3}-\frac{7 b^2 B^2 n^2 \text{Log}[c+d x]}{2 (b c-a d)^3 g i^3}+\frac{2 A b^2 B n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^3 g i^3}-\frac{3 b^2 B^2 n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^3 g i^3}+\frac{b^2 B^2 \text{Log}\left[(a+b x)^n\right]^2 \text{Log}[c+d x]}{(b c-a d)^3 g i^3}+\frac{3 b^2 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{(b c-a d)^3 g i^3}-\frac{b^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}[c+d x]}{(b c-a d)^3 g i^3}-\frac{A b^2 B n \text{Log}[c+d x]^2}{(b c-a d)^3 g i^3}+\frac{3 b^2 B^2 n^2 \text{Log}[c+d x]^2}{2 (b c-a d)^3 g i^3}+\frac{b^2 B^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x]^2}{(b c-a d)^3 g i^3}-\frac{b^2 B^2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]^2}{(b c-a d)^3 g i^3}-\frac{b^2 B^2 n^2 \text{Log}[c+d x]^3}{3 (b c-a d)^3 g i^3}+\frac{2 A b^2 B n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}-\frac{3 b^2 B^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}-\frac{b^2 B^2 \text{Log}\left[(a+b x)^n\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}+\frac{2 b^2 B^2 n \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[(c+d x)^{-n}\right]}{(b c-a d)^3 g i^3}+$$

$$\frac{b^2 B^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^3 g i^3}-\frac{b^2 B^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^3 g i^3}-\frac{1}{(b c-a d)^3 g i^3}$$

$$2 b^2 B^2 n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x] \left(\operatorname{Log}\left[(a+b x)^n\right]-\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\operatorname{Log}\left[(c+d x)^{-n}\right]\right)+$$

$$\frac{2 A b^2 B n \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}-\frac{3 b^2 B^2 n^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}-$$

$$\frac{2 b^2 B^2 n \operatorname{Log}\left[(a+b x)^n\right] \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}+\frac{2 A b^2 B n \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}-$$

$$\frac{3 b^2 B^2 n^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}+\frac{2 b^2 B^2 n \operatorname{Log}\left[(c+d x)^{-n}\right] \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}-\frac{1}{(b c-a d)^3 g i^3}$$

$$2 b^2 B^2 n \left(\operatorname{Log}\left[(a+b x)^n\right]-\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\operatorname{Log}\left[(c+d x)^{-n}\right]\right) \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+$$

$$\frac{2 b^2 B^2 n \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \operatorname{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^3 g i^3}+\frac{2 b^2 B^2 n^2 \operatorname{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}+$$

$$\frac{2 b^2 B^2 n^2 \operatorname{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^3 g i^3}+\frac{2 b^2 B^2 n^2 \operatorname{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^3 g i^3}$$

Problem 207: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^2 (c i+d i x)^3} \, dx$$

Optimal (type 3, 562 leaves, 12 steps):

$$-\frac{B^2 d^3 n^2 (a+b x)^2}{4 (b c-a d)^4 g^2 i^3 (c+d x)^2}-\frac{6 A b B d^2 n (a+b x)}{(b c-a d)^4 g^2 i^3 (c+d x)}+$$

$$\frac{6 b B^2 d^2 n^2 (a+b x)}{(b c-a d)^4 g^2 i^3 (c+d x)}-\frac{2 b^3 B^2 n^2 (c+d x)}{(b c-a d)^4 g^2 i^3 (a+b x)}-\frac{6 b B^2 d^2 n (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d)^4 g^2 i^3 (c+d x)}+$$

$$\frac{B d^3 n (a+b x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^4 g^2 i^3 (c+d x)^2}-\frac{2 b^3 B n (c+d x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^2 i^3 (a+b x)}-$$

$$\frac{d^3 (a+b x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^4 g^2 i^3 (c+d x)^2}+\frac{3 b d^2 (a+b x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^2 i^3 (c+d x)}-$$

$$\frac{b^3 (c+d x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^2 i^3 (a+b x)}-\frac{b^2 d \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{B (b c-a d)^4 g^2 i^3 n}$$

Result (type 4, 2207 leaves, 135 steps) :

$$-\frac{2 b^2 B^2 n^2}{(b c-a d)^3 g^2 i^3 (a+b x)}-\frac{B^2 d n^2}{4 (b c-a d)^2 g^2 i^3 (c+d x)^2}-\frac{11 b B^2 d n^2}{2 (b c-a d)^3 g^2 i^3 (c+d x)}-$$

$$\frac{15 b^2 B^2 d n^2 \text{Log}[a+b x]}{2 (b c-a d)^4 g^2 i^3}+\frac{3 A b^2 B d n \text{Log}[a+b x]^2}{(b c-a d)^4 g^2 i^3}-\frac{3 b^2 B^2 d n^2 \text{Log}[a+b x]^2}{2 (b c-a d)^4 g^2 i^3}+$$

$$\frac{3 b^2 B^2 d \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^4 g^2 i^3}+\frac{3 b^2 B^2 d \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^4 g^2 i^3}-$$

$$\frac{2 b^2 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^2 i^3 (a+b x)}+\frac{B d n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^2 g^2 i^3 (c+d x)^2}+$$

$$\frac{5 b B d n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^2 i^3 (c+d x)}+\frac{3 b^2 B d n \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^2 i^3}-$$

$$\frac{b^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g^2 i^3 (a+b x)}-\frac{d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^2 g^2 i^3 (c+d x)^2}-\frac{2 b d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g^2 i^3 (c+d x)}-$$

$$\frac{3 b^2 d \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^2 i^3}+\frac{15 b^2 B^2 d n^2 \text{Log}[c+d x]}{2 (b c-a d)^4 g^2 i^3}-$$

$$\frac{6 A b^2 B d n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^4 g^2 i^3}+\frac{3 b^2 B^2 d n^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^4 g^2 i^3}-$$

$$\frac{3 b^2 B^2 d \text{Log}\left[(a+b x)^n\right]^2 \text{Log}[c+d x]}{(b c-a d)^4 g^2 i^3}-\frac{3 b^2 B d n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[c+d x]}{(b c-a d)^4 g^2 i^3}+$$

$$\frac{3 b^2 d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}[c+d x]}{(b c-a d)^4 g^2 i^3}+\frac{3 A b^2 B d n \text{Log}[c+d x]^2}{(b c-a d)^4 g^2 i^3}-$$

$$\frac{3 b^2 B^2 d n^2 \text{Log}[c+d x]^2}{2 (b c-a d)^4 g^2 i^3}-\frac{3 b^2 B^2 d n^2 \text{Log}[a+b x] \text{Log}[c+d x]^2}{(b c-a d)^4 g^2 i^3}+$$

$$\frac{3 b^2 B^2 d n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]^2}{(b c-a d)^4 g^2 i^3}+\frac{b^2 B^2 d n^2 \text{Log}[c+d x]^3}{(b c-a d)^4 g^2 i^3}-$$

$$\frac{6 A b^2 B d n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^4 g^2 i^3}+\frac{3 b^2 B^2 d n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^4 g^2 i^3}+$$

$$\frac{3 b^2 B^2 d \text{Log}\left[(a+b x)^n\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^4 g^2 i^3}-\frac{6 b^2 B^2 d n \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[(c+d x)^{-n}\right]}{(b c-a d)^4 g^2 i^3}-$$

$$\frac{3 b^2 B^2 d \text{Log}[a+b x] \text{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^4 g^2 i^3}+\frac{3 b^2 B^2 d \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^4 g^2 i^3}+\frac{1}{(b c-a d)^4 g^2 i^3}$$

$$6\,b^2 B^2 d\,n \,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right] \text{Log}[c+d\,x] \left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right) -$$

$$\frac{6\,A\,b^2 B\,d\,n\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4 g^2 i^3}+\frac{3\,b^2 B^2 d\,n^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4 g^2 i^3}+$$

$$\frac{6\,b^2 B^2 d\,n\,\text{Log}\left[(a+b\,x)^n\right]\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4 g^2 i^3}-$$

$$\frac{6\,A\,b^2 B\,d\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4 g^2 i^3}+\frac{3\,b^2 B^2 d\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4 g^2 i^3}-$$

$$\frac{6\,b^2 B^2 d\,n\,\text{Log}\left[(c+d\,x)^{-n}\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4 g^2 i^3}+\frac{1}{(b\,c-a\,d)^4 g^2 i^3}$$

$$6\,b^2 B^2 d\,n\left(\text{Log}\left[(a+b\,x)^n\right]-\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\text{Log}\left[(c+d\,x)^{-n}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$\frac{6\,b^2 B^2 d\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4 g^2 i^3}-\frac{6\,b^2 B^2 d\,n^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4 g^2 i^3}-$$

$$\frac{6\,b^2 B^2 d\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{(b\,c-a\,d)^4 g^2 i^3}-\frac{6\,b^2 B^2 d\,n^2\,\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{(b\,c-a\,d)^4 g^2 i^3}$$

Problem 208: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 3, 732 leaves, 14 steps):

$$\frac{B^2 d^4 n^2 (a+b x)^2}{4 (b c-a d)^5 g^3 i^3 (c+d x)^2}+\frac{8 A b B d^3 n (a+b x)}{(b c-a d)^5 g^3 i^3 (c+d x)}-\frac{8 b B^2 d^3 n^2 (a+b x)}{(b c-a d)^5 g^3 i^3 (c+d x)}+\frac{8 b^3 B^2 d n^2 (c+d x)}{(b c-a d)^5 g^3 i^3 (a+b x)}-\frac{b^4 B^2 n^2 (c+d x)^2}{4 (b c-a d)^5 g^3 i^3 (a+b x)^2}+\frac{8 b B^2 d^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d)^5 g^3 i^3 (c+d x)}-\frac{B d^4 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^5 g^3 i^3 (c+d x)^2}+\frac{8 b^3 B d n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^5 g^3 i^3 (a+b x)}-\frac{b^4 B n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^5 g^3 i^3 (a+b x)^2}+\frac{d^4 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^5 g^3 i^3 (c+d x)^2}-\frac{4 b d^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^5 g^3 i^3 (c+d x)}+\frac{4 b^3 d (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^5 g^3 i^3 (a+b x)}-\frac{b^4 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^5 g^3 i^3 (a+b x)^2}+\frac{2 b^2 d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{B (b c-a d)^5 g^3 i^3 n}$$

Result (type 4, 2041 leaves, 163 steps):

$$-\frac{b^2 B^2 n^2}{4 (b c-a d)^3 g^3 i^3 (a+b x)^2}+\frac{15 b^2 B^2 d n^2}{2 (b c-a d)^4 g^3 i^3 (a+b x)}+\frac{B^2 d^2 n^2}{4 (b c-a d)^3 g^3 i^3 (c+d x)^2}+\frac{15 b B^2 d^2 n^2}{2 (b c-a d)^4 g^3 i^3 (c+d x)}+\frac{15 b^2 B^2 d^2 n^2 \text{Log}[a+b x]}{(b c-a d)^5 g^3 i^3}-\frac{6 A b^2 B d^2 n \text{Log}[a+b x]^2}{(b c-a d)^5 g^3 i^3}-\frac{6 b^2 B^2 d^2 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^5 g^3 i^3}-\frac{6 b^2 B^2 d^2 \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^5 g^3 i^3}-\frac{b^2 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^3 g^3 i^3 (a+b x)^2}+\frac{7 b^2 B d n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^3 i^3 (a+b x)}-\frac{B d^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^3 g^3 i^3 (c+d x)^2}-\frac{7 b B d^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^3 i^3 (c+d x)}-\frac{b^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^3 g^3 i^3 (a+b x)^2}+\frac{3 b^2 d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^3 i^3 (a+b x)}+\frac{d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^3 g^3 i^3 (c+d x)^2}+\frac{3 b d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^3 i^3 (c+d x)}+\frac{6 b^2 d^2 \text{Log}[a+b x] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^5 g^3 i^3}-\frac{15 b^2 B^2 d^2 n^2 \text{Log}[c+d x]}{(b c-a d)^5 g^3 i^3}+\frac{12 A b^2 B d^2 n \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{(b c-a d)^5 g^3 i^3}+\frac{6 b^2 B^2 d^2 \text{Log}\left[(a+b x)^n\right]^2 \text{Log}[c+d x]}{(b c-a d)^5 g^3 i^3}-\frac{6 b^2 d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}[c+d x]}{(b c-a d)^5 g^3 i^3}-$$

$$\frac{6 A b^2 B d^2 n \operatorname{Log}[c+d x]^2}{(b c-a d)^5 g^3 i^3}+\frac{6 b^2 B^2 d^2 n^2 \operatorname{Log}[a+b x] \operatorname{Log}[c+d x]^2}{(b c-a d)^5 g^3 i^3}-$$

$$\frac{6 b^2 B^2 d^2 n \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \operatorname{Log}[c+d x]^2}{(b c-a d)^5 g^3 i^3}-\frac{2 b^2 B^2 d^2 n^2 \operatorname{Log}[c+d x]^3}{(b c-a d)^5 g^3 i^3}+$$

$$\frac{12 A b^2 B d^2 n \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}-\frac{6 b^2 B^2 d^2 \operatorname{Log}\left[(a+b x)^n\right]^2 \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}+$$

$$\frac{12 b^2 B^2 d^2 n \operatorname{Log}[a+b x] \operatorname{Log}[c+d x] \operatorname{Log}\left[(c+d x)^{-n}\right]}{(b c-a d)^5 g^3 i^3}+\frac{6 b^2 B^2 d^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^5 g^3 i^3}-$$

$$\frac{6 b^2 B^2 d^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^5 g^3 i^3}-\frac{1}{(b c-a d)^5 g^3 i^3}$$

$$12 b^2 B^2 d^2 n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x] \left(\operatorname{Log}\left[(a+b x)^n\right]-\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\operatorname{Log}\left[(c+d x)^{-n}\right]\right)+$$

$$\frac{12 A b^2 B d^2 n \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}-$$

$$\frac{12 b^2 B^2 d^2 n \operatorname{Log}\left[(a+b x)^n\right] \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}+\frac{12 A b^2 B d^2 n \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}+$$

$$\frac{12 b^2 B^2 d^2 n \operatorname{Log}\left[(c+d x)^{-n}\right] \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}-\frac{1}{(b c-a d)^5 g^3 i^3}$$

$$12 b^2 B^2 d^2 n \left(\operatorname{Log}\left[(a+b x)^n\right]-\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\operatorname{Log}\left[(c+d x)^{-n}\right]\right) \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+$$

$$\frac{12 b^2 B^2 d^2 n \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \operatorname{PolyLog}\left[2,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^5 g^3 i^3}+\frac{12 b^2 B^2 d^2 n^2 \operatorname{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}+$$

$$\frac{12 b^2 B^2 d^2 n^2 \operatorname{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^5 g^3 i^3}+\frac{12 b^2 B^2 d^2 n^2 \operatorname{PolyLog}\left[3,1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^5 g^3 i^3}$$

Problem 209: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^4 (c i+d i x)^3} \, dx$$

Optimal (type 3, 908 leaves, 16 steps):

$$-\frac{B^2 d^5 n^2 (a+b x)^2}{4 (b c-a d)^6 g^4 i^3 (c+d x)^2}-\frac{10 A b B d^4 n (a+b x)}{(b c-a d)^6 g^4 i^3 (c+d x)}+\frac{10 b B^2 d^4 n^2 (a+b x)}{(b c-a d)^6 g^4 i^3 (c+d x)}-\frac{20 b^3 B^2 d^2 n^2 (c+d x)}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 B^2 d n^2 (c+d x)^2}{4 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{2 b^5 B^2 n^2 (c+d x)^3}{27 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{10 b B^2 d^4 n (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d)^6 g^4 i^3 (c+d x)}+\frac{B d^5 n (a+b x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^6 g^4 i^3 (c+d x)^2}-\frac{20 b^3 B d^2 n (c+d x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 B d n (c+d x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{2 b^5 B n (c+d x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{d^5 (a+b x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^6 g^4 i^3 (c+d x)^2}+\frac{5 b d^4 (a+b x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^6 g^4 i^3 (c+d x)}-\frac{10 b^3 d^2 (c+d x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 d (c+d x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{b^5 (c+d x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{10 b^2 d^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{3 B (b c-a d)^6 g^4 i^3 n}$$

Result (type 4, 2610 leaves, 195 steps):

$$-\frac{2 b^2 B^2 n^2}{27 (b c-a d)^3 g^4 i^3 (a+b x)^3}+\frac{37 b^2 B^2 d n^2}{36 (b c-a d)^4 g^4 i^3 (a+b x)^2}-\frac{319 b^2 B^2 d^2 n^2}{18 (b c-a d)^5 g^4 i^3 (a+b x)}-\frac{B^2 d^3 n^2}{4 (b c-a d)^4 g^4 i^3 (c+d x)^2}-\frac{19 b B^2 d^3 n^2}{2 (b c-a d)^5 g^4 i^3 (c+d x)}-\frac{245 b^2 B^2 d^3 n^2 \operatorname{Log}[a+b x]}{9 (b c-a d)^6 g^4 i^3}+\frac{10 A b^2 B d^3 n \operatorname{Log}[a+b x]^2}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 B^2 d^3 n^2 \operatorname{Log}[a+b x]^2}{3 (b c-a d)^6 g^4 i^3}+\frac{10 b^2 B^2 d^3 \operatorname{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 B^2 d^3 \operatorname{Log}[a+b x] \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2}{(b c-a d)^6 g^4 i^3}-\frac{2 b^2 B n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^3 g^4 i^3 (a+b x)^3}+\frac{11 b^2 B d n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 (b c-a d)^4 g^4 i^3 (a+b x)^2}-\frac{47 b^2 B d^2 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 (b c-a d)^5 g^4 i^3 (a+b x)}+\frac{B d^3 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^4 g^4 i^3 (c+d x)^2}+\frac{9 b B d^3 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^5 g^4 i^3 (c+d x)}-\frac{20 b^2 B d^3 n \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 (b c-a d)^6 g^4 i^3}-\frac{b^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d)^3 g^4 i^3 (a+b x)^3}+$$

$$\frac{3 b^2 d \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^4 g^4 i^3 (a+b x)^2}-\frac{6 b^2 d^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^5 g^4 i^3 (a+b x)}-\frac{d^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^4 g^4 i^3 (c+d x)^2}-$$

$$\frac{4 b d^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^5 g^4 i^3 (c+d x)}-\frac{10 b^2 d^3 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^6 g^4 i^3}+$$

$$\frac{245 b^2 B^2 d^3 n^2 \operatorname{Log}[c+d x]}{9 (b c-a d)^6 g^4 i^3}-\frac{20 A b^2 B d^3 n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{(b c-a d)^6 g^4 i^3}-$$

$$\frac{20 b^2 B^2 d^3 n^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{3 (b c-a d)^6 g^4 i^3}-\frac{10 b^2 B^2 d^3 \operatorname{Log}\left[(a+b x)^n\right]^2 \operatorname{Log}[c+d x]}{(b c-a d)^6 g^4 i^3}+$$

$$\frac{20 b^2 B d^3 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}[c+d x]}{3 (b c-a d)^6 g^4 i^3}+\frac{10 b^2 d^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \operatorname{Log}[c+d x]}{(b c-a d)^6 g^4 i^3}+$$

$$\frac{10 A b^2 B d^3 n \operatorname{Log}[c+d x]^2}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 B^2 d^3 n^2 \operatorname{Log}[c+d x]^2}{3 (b c-a d)^6 g^4 i^3}-$$

$$\frac{10 b^2 B^2 d^3 n^2 \operatorname{Log}[a+b x] \operatorname{Log}[c+d x]^2}{(b c-a d)^6 g^4 i^3}+\frac{10 b^2 B^2 d^3 n \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \operatorname{Log}[c+d x]^2}{(b c-a d)^6 g^4 i^3}+$$

$$\frac{10 b^2 B^2 d^3 n^2 \operatorname{Log}[c+d x]^3}{3 (b c-a d)^6 g^4 i^3}-\frac{20 A b^2 B d^3 n \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}-$$

$$\frac{20 b^2 B^2 d^3 n^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 (b c-a d)^6 g^4 i^3}+\frac{10 b^2 B^2 d^3 \operatorname{Log}\left[(a+b x)^n\right]^2 \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}-$$

$$\frac{20 b^2 B^2 d^3 n \operatorname{Log}[a+b x] \operatorname{Log}[c+d x] \operatorname{Log}\left[(c+d x)^{-n}\right]}{(b c-a d)^6 g^4 i^3}-\frac{10 b^2 B^2 d^3 \operatorname{Log}[a+b x] \operatorname{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^6 g^4 i^3}+$$

$$\frac{10 b^2 B^2 d^3 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[(c+d x)^{-n}\right]^2}{(b c-a d)^6 g^4 i^3}+\frac{1}{(b c-a d)^6 g^4 i^3}$$

$$20 b^2 B^2 d^3 n \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x] \left(\operatorname{Log}\left[(a+b x)^n\right]-\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\operatorname{Log}\left[(c+d x)^{-n}\right]\right)-$$

$$\frac{20 A b^2 B d^3 n \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}-\frac{20 b^2 B^2 d^3 n^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 (b c-a d)^6 g^4 i^3}+$$

$$\frac{20 b^2 B^2 d^3 n \operatorname{Log}\left[(a+b x)^n\right] \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}-$$

$$\frac{20 A b^2 B d^3 n \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}-\frac{20 b^2 B^2 d^3 n^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 (b c-a d)^6 g^4 i^3}-$$

$$\frac{20 b^2 B^2 d^3 n \operatorname{Log}\left[(c+d x)^{-n}\right] \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}+\frac{1}{(b c-a d)^6 g^4 i^3}$$

$$20\, b^2 B^2 d^3 n \left(\text{Log}\left[(a+b x)^n\right]-\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+\text{Log}\left[(c+d x)^{-n}\right]\right) \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]-$$

$$\frac{20\, b^2 B^2 d^3 n\, \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \text{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^6 g^4 i^3}-\frac{20\, b^2 B^2 d^3 n^2\, \text{PolyLog}\left[3,-\frac{d (a+b x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}-$$

$$\frac{20\, b^2 B^2 d^3 n^2\, \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{(b c-a d)^6 g^4 i^3}-\frac{20\, b^2 B^2 d^3 n^2\, \text{PolyLog}\left[3, 1+\frac{b c-a d}{d (a+b x)}\right]}{(b c-a d)^6 g^4 i^3}$$

Problem 210: Unable to integrate problem.

$$\int (a g+b g x)^m (c i+d i x)^{-2-m} \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^p dx$$

Optimal (type 4, 189 leaves, 3 steps):

$$\left(e^{-\frac{A (1+m)}{B n}} (a+b x) (g (a+b x))^m \left(e\left(\frac{a+b x}{c+d x}\right)^n\right)^{-\frac{1+m}{n}} (i (c+d x))^{-m}\right.$$
$$\text{Gamma}\left[1+p,-\frac{(1+m) \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right] \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^p$$
$$\left.\left(-\frac{(1+m) \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right)^{-p}\right) \Big/ \left((b c-a d)\, i^2 (1+m) (c+d x)\right)$$

Result (type 8, 51 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(a g+b g x)^m (c i+d i x)^{-2-m} \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^p, x\right]$$

Problem 211: Unable to integrate problem.

$$\int (a g+b g x)^{-2-m} (c i+d i x)^m \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^p dx$$

Optimal (type 4, 190 leaves, 3 steps):

$$-\left(\left(e^{\frac{A (1+m)}{B n}} (a+b x) (g (a+b x))^{-2-m} \left(e\left(\frac{a+b x}{c+d x}\right)^n\right)^{\frac{1+m}{n}} (i (c+d x))^{2+m}\right.\right.$$
$$\text{Gamma}\left[1+p, \frac{(1+m) \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right] \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^p$$
$$\left.\left.\left(\frac{(1+m) \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right)^{-p}\right) \Big/ \left((b c-a d)\, i^2 (1+m) (c+d x)\right)\right)$$

Result (type 8, 51 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(a g+b g x)^{-2-m}(c i+d i x)^{m}\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^{n}\right]\right)^{p},x\right]$$

Problem 212: Unable to integrate problem.

$$\int (a g+b g x)^{m}(c i+d i x)^{-2-m}\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^{n}\right]\right)^{3}dx$$

Optimal (type 3, 292 leaves, 4 steps):

$$-\frac{6 B^{3} n^{3}(a+b x)(g(a+b x))^{m}(i(c+d x))^{-m}}{(b c-a d)\, i^{2}(1+m)^{4}(c+d x)}+\frac{6 B^{2} n^{2}(a+b x)(g(a+b x))^{m}(i(c+d x))^{-m}\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^{n}\right]\right)}{(b c-a d)\, i^{2}(1+m)^{3}(c+d x)}-\frac{3 B n(a+b x)(g(a+b x))^{m}(i(c+d x))^{-m}\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^{n}\right]\right)^{2}}{(b c-a d)\, i^{2}(1+m)^{2}(c+d x)}+\frac{(a+b x)(g(a+b x))^{m}(i(c+d x))^{-m}\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^{n}\right]\right)^{3}}{(b c-a d)\, i^{2}(1+m)(c+d x)}$$

Result (type 8, 281 leaves, 6 steps):

$$\frac{A^{3}(a g+b g x)^{1+m}(c i+d i x)^{-1-m}}{(b c-a d)\, g i(1+m)}-\frac{3 A^{2} B n(a g+b g x)^{1+m}(c i+d i x)^{-1-m}}{(b c-a d)\, g i(1+m)^{2}}+3 A B^{2}\,\text{CannotIntegrate}\left[(a g+b g x)^{m}(c i+d i x)^{-2-m}\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^{n}\right]^{2},x\right]+B^{3}\,\text{CannotIntegrate}\left[(a g+b g x)^{m}(c i+d i x)^{-2-m}\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^{n}\right]^{3},x\right]+\frac{3 A^{2} B(a g+b g x)^{1+m}(c i+d i x)^{-1-m}\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^{n}\right]}{(b c-a d)\, g i(1+m)}$$

Problem 213: Unable to integrate problem.

$$\int (a g+b g x)^{m}(c i+d i x)^{-2-m}\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^{n}\right]\right)^{2}dx$$

Optimal (type 3, 210 leaves, 3 steps):

$$\frac{2 B^2 n^2 (a+b x) (g (a+b x))^m (i (c+d x))^{-m}}{(b c-a d) i^2 (1+m)^3 (c+d x)}-\frac{2 B n (a+b x) (g (a+b x))^m (i (c+d x))^{-m} \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d) i^2 (1+m)^2 (c+d x)}+\frac{(a+b x) (g (a+b x))^m (i (c+d x))^{-m} \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d) i^2 (1+m) (c+d x)}$$

Result (type 8, 224 leaves, 6 steps):

$$\frac{A^2 (a g+b g x)^{1+m} (c i+d i x)^{-1-m}}{(b c-a d) g i (1+m)}-\frac{2 A B n (a g+b g x)^{1+m} (c i+d i x)^{-1-m}}{(b c-a d) g i (1+m)^2}+B^2 \text{CannotIntegrate}\left[(a g+b g x)^m (c i+d i x)^{-2-m} \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2, x\right]+\frac{2 A B (a g+b g x)^{1+m} (c i+d i x)^{-1-m} \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d) g i (1+m)}$$

Problem 214: Result valid but suboptimal antiderivative.

$$\int (a g+b g x)^m (c i+d i x)^{-2-m} \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \, dx$$

Optimal (type 3, 128 leaves, 2 steps):

$$-\frac{B n (a+b x) (g (a+b x))^m (i (c+d x))^{-m}}{(b c-a d) i^2 (1+m)^2 (c+d x)}+\frac{(a+b x) (g (a+b x))^m (i (c+d x))^{-m} \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d) i^2 (1+m) (c+d x)}$$

Result (type 3, 168 leaves, 6 steps):

$$\frac{A (a g+b g x)^{1+m} (c i+d i x)^{-1-m}}{(b c-a d) g i (1+m)}-\frac{B n (a g+b g x)^{1+m} (c i+d i x)^{-1-m}}{(b c-a d) g i (1+m)^2}+\frac{B (a g+b g x)^{1+m} (c i+d i x)^{-1-m} \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d) g i (1+m)}$$

Problem 215: Unable to integrate problem.

$$\int \frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]} \, dx$$

Optimal (type 4, 125 leaves, 3 steps):

$$\left(e^{-\frac{A(1+m)}{B n}} (a+b x) (g (a+b x))^m \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{-\frac{1+m}{n}} (i (c+d x))^{-m} \text{ExpIntegralEi}\left[\frac{(1+m) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]\right) \Big/ \left(B (b c-a d) i^2 n (c+d x)\right)$$

Result (type 8, 51 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}, x\right]$$

Problem 216: Unable to integrate problem.

$$\int \frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Optimal (type 4, 206 leaves, 4 steps):

$$\left(e^{-\frac{A(1+m)}{B n}} (1+m) (a+b x) (g (a+b x))^m \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{-\frac{1+m}{n}} (i (c+d x))^{-m} \text{ExpIntegralEi}\left[\frac{(1+m) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]\right) \Big/ \left(B^2 (b c-a d) i^2 n^2 (c+d x)\right) - \frac{(a+b x) (g (a+b x))^m (i (c+d x))^{-m}}{B (b c-a d) i^2 n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}$$

Result (type 8, 51 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}, x\right]$$

Problem 217: Unable to integrate problem.

$$\int \frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3} \, dx$$

Optimal (type 4, 295 leaves, 5 steps):

$$\left(e^{-\frac{A(1+m)}{B n}} (1+m)^2 (a+b x) (g (a+b x))^m \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{-\frac{1+m}{n}} (i (c+d x))^{-m}\right.$$

$$\left.\text{ExpIntegralEi}\left[\frac{(1+m) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]\right) \Big/ \left(2 B^3 (b c-a d) i^2 n^3 (c+d x)\right) -$$

$$\frac{(a+b x) (g (a+b x))^m (i (c+d x))^{-m}}{2 B (b c-a d) i^2 n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} - \frac{(1+m) (a+b x) (g (a+b x))^m (i (c+d x))^{-m}}{2 B^2 (b c-a d) i^2 n^2 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}$$

Result (type 8, 51 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}, x\right]$$

Problem 218: Unable to integrate problem.

$$\int (a g+b g x)^{-2-m} (c i+d i x)^m \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3 dx$$

Optimal (type 3, 309 leaves, 4 steps):

$$-\frac{6 B^3 n^3 (a+b x) (g (a+b x))^{-2-m} (i (c+d x))^{2+m}}{(b c-a d) i^2 (1+m)^4 (c+d x)} -$$

$$\left(6 B^2 n^2 (a+b x) (g (a+b x))^{-2-m} (i (c+d x))^{2+m} \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)\right) \Big/ \left((b c-a d) i^2 (1+m)^3 (c+d x)\right) -$$

$$\left(3 B n (a+b x) (g (a+b x))^{-2-m} (i (c+d x))^{2+m} \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2\right) \Big/ \left((b c-a d) i^2 (1+m)^2 (c+d x)\right) -$$

$$\frac{(a+b x) (g (a+b x))^{-2-m} (i (c+d x))^{2+m} \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{(b c-a d) i^2 (1+m) (c+d x)}$$

Result (type 8, 282 leaves, 6 steps):

$$-\frac{A^3\,(a\,g+b\,g\,x)^{-1-m}\,(c\,i+d\,i\,x)^{1+m}}{(b\,c-a\,d)\,g\,i\,(1+m)}-\frac{3\,A^2\,B\,n\,(a\,g+b\,g\,x)^{-1-m}\,(c\,i+d\,i\,x)^{1+m}}{(b\,c-a\,d)\,g\,i\,(1+m)^2}+$$
$$3\,A\,B^2\,\text{CannotIntegrate}\left[(a\,g+b\,g\,x)^{-2-m}\,(c\,i+d\,i\,x)^m\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2,\,x\right]+$$
$$B^3\,\text{CannotIntegrate}\left[(a\,g+b\,g\,x)^{-2-m}\,(c\,i+d\,i\,x)^m\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^3,\,x\right]-$$
$$\frac{3\,A^2\,B\,(a\,g+b\,g\,x)^{-1-m}\,(c\,i+d\,i\,x)^{1+m}\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)\,g\,i\,(1+m)}$$

Problem 219: Unable to integrate problem.

$$\int(a\,g+b\,g\,x)^{-2-m}\,(c\,i+d\,i\,x)^m\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 3, 223 leaves, 3 steps):

$$-\frac{2\,B^2\,n^2\,(a+b\,x)\,(g\,(a+b\,x))^{-2-m}\,(i\,(c+d\,x))^{2+m}}{(b\,c-a\,d)\,i^2\,(1+m)^3\,(c+d\,x)}-$$
$$\frac{2\,B\,n\,(a+b\,x)\,(g\,(a+b\,x))^{-2-m}\,(i\,(c+d\,x))^{2+m}\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)\,i^2\,(1+m)^2\,(c+d\,x)}-$$
$$\frac{(a+b\,x)\,(g\,(a+b\,x))^{-2-m}\,(i\,(c+d\,x))^{2+m}\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)\,i^2\,(1+m)\,(c+d\,x)}$$

Result (type 8, 225 leaves, 6 steps):

$$-\frac{A^2\,(a\,g+b\,g\,x)^{-1-m}\,(c\,i+d\,i\,x)^{1+m}}{(b\,c-a\,d)\,g\,i\,(1+m)}-\frac{2\,A\,B\,n\,(a\,g+b\,g\,x)^{-1-m}\,(c\,i+d\,i\,x)^{1+m}}{(b\,c-a\,d)\,g\,i\,(1+m)^2}+$$
$$B^2\,\text{CannotIntegrate}\left[(a\,g+b\,g\,x)^{-2-m}\,(c\,i+d\,i\,x)^m\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2,\,x\right]-$$
$$\frac{2\,A\,B\,(a\,g+b\,g\,x)^{-1-m}\,(c\,i+d\,i\,x)^{1+m}\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)\,g\,i\,(1+m)}$$

Problem 220: Result valid but suboptimal antiderivative.

$$\int(a\,g+b\,g\,x)^{-2-m}\,(c\,i+d\,i\,x)^m\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,dx$$

Optimal (type 3, 137 leaves, 2 steps):

$$-\frac{B\,n\,(a+b\,x)\,(g\,(a+b\,x))^{-2-m}\,(i\,(c+d\,x))^{2+m}}{(b\,c-a\,d)\,i^2\,(1+m)^2\,(c+d\,x)}-$$
$$\frac{(a+b\,x)\,(g\,(a+b\,x))^{-2-m}\,(i\,(c+d\,x))^{2+m}\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)\,i^2\,(1+m)\,(c+d\,x)}$$

Result (type 3, 170 leaves, 6 steps):

$$-\frac{A\,(a\,g+b\,g\,x)^{-1-m}\,(c\,i+d\,i\,x)^{1+m}}{(b\,c-a\,d)\,g\,i\,(1+m)}-\frac{B\,n\,(a\,g+b\,g\,x)^{-1-m}\,(c\,i+d\,i\,x)^{1+m}}{(b\,c-a\,d)\,g\,i\,(1+m)^2}-\frac{B\,(a\,g+b\,g\,x)^{-1-m}\,(c\,i+d\,i\,x)^{1+m}\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)\,g\,i\,(1+m)}$$

Problem 221: Unable to integrate problem.

$$\int\frac{(a\,g+b\,g\,x)^{-2-m}\,(c\,i+d\,i\,x)^m}{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}\,dx$$

Optimal (type 4, 128 leaves, 3 steps):

$$\left(e^{\frac{A\,(1+m)}{B\,n}}\,(a+b\,x)\,(g\,(a+b\,x))^{-2-m}\,\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^{\frac{1+m}{n}}\,(i\,(c+d\,x))^{2+m}\;\text{ExpIntegralEi}\left[-\frac{(1+m)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{B\,n}\right]\right)\Big/\left(B\,(b\,c-a\,d)\,i^2\,n\,(c+d\,x)\right)$$

Result (type 8, 51 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{(a\,g+b\,g\,x)^{-2-m}\,(c\,i+d\,i\,x)^m}{A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]},\,x\right]$$

Problem 222: Unable to integrate problem.

$$\int\frac{(a\,g+b\,g\,x)^{-2-m}\,(c\,i+d\,i\,x)^m}{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}\,dx$$

Optimal (type 4, 214 leaves, 4 steps):

$$-\left(\left(e^{\frac{A\,(1+m)}{B\,n}}\,(1+m)\,(a+b\,x)\,(g\,(a+b\,x))^{-2-m}\,\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^{\frac{1+m}{n}}\,(i\,(c+d\,x))^{2+m}\;\text{ExpIntegralEi}\left[-\frac{(1+m)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{B\,n}\right]\right)\Big/\left(B^2\,(b\,c-a\,d)\,i^2\,n^2\,(c+d\,x)\right)\right)-\frac{(a+b\,x)\,(g\,(a+b\,x))^{-2-m}\,(i\,(c+d\,x))^{2+m}}{B\,(b\,c-a\,d)\,i^2\,n\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}$$

Result (type 8, 51 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{(a\,g+b\,g\,x)^{-2-m}\,(c\,i+d\,i\,x)^m}{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right]$$

Problem 223: Unable to integrate problem.

$$\int \frac{(a g+b g x)^{-2-m} (c i+d i x)^m}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3} \, dx$$

Optimal (type 4, 306 leaves, 5 steps):

$$\left(e^{\frac{A (1+m)}{B n}} (1+m)^2 (a+b x) (g (a+b x))^{-2-m} \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{\frac{1+m}{n}} (i (c+d x))^{2+m} \text{ExpIntegralEi}\left[-\frac{(1+m) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]\right) \Big/ \left(2 B^3 (b c-a d) i^2 n^3 (c+d x)\right)-\frac{(a+b x) (g (a+b x))^{-2-m} (i (c+d x))^{2+m}}{2 B (b c-a d) i^2 n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}+\frac{(1+m) (a+b x) (g (a+b x))^{-2-m} (i (c+d x))^{2+m}}{2 B^2 (b c-a d) i^2 n^2 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}$$

Result (type 8, 51 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{(a g+b g x)^{-2-m} (c i+d i x)^m}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}, x\right]$$

Problem 226: Unable to integrate problem.

$$\int (a g+b g x)^m (c i+d i x)^{-2-m} \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^p \, dx$$

Optimal (type 4, 193 leaves, 4 steps):

$$\left(e^{-\frac{A (1+m)}{B n}} (a+b x) (g (a+b x))^m (i (c+d x))^{-m} \left(e (a+b x)^n (c+d x)^{-n}\right)^{-\frac{1+m}{n}} \text{Gamma}\left[1+p, -\frac{(1+m) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{B n}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^p \left(-\frac{(1+m) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{B n}\right)^{-p}\right) \Big/ \left((b c-a d) i^2 (1+m) (c+d x)\right)$$

Result (type 8, 52 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(a g+b g x)^m (c i+d i x)^{-2-m} \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^p, x\right]$$

Problem 227: Unable to integrate problem.

$$\int (a g+b g x)^{-2-m} (c i+d i x)^m \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^p \, dx$$

Optimal (type 4, 194 leaves, 4 steps):

$$-\left(\left(e^{\frac{A(1+m)}{Bn}}(a+bx)(g(a+bx))^{-2-m}(i(c+dx))^{2+m}\left(e(a+bx)^n(c+dx)^{-n}\right)^{\frac{1+m}{n}}\right.\right.$$
$$\text{Gamma}\left[1+p,\frac{(1+m)\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)}{Bn}\right]\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)^p$$
$$\left.\left.\left(\frac{(1+m)\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)}{Bn}\right)^{-p}\right)\Big/\left((bc-ad)\,i^2\,(1+m)\,(c+dx)\right)\right)$$

Result (type 8, 52 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(ag+bgx)^{-2-m}(ci+dix)^m\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)^p,x\right]$$

Problem 249: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)^4}{(f+gx)(ah+bhx)}\,dx$$

Optimal (type 4, 361 leaves, 8 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)^4\text{Log}\left[1-\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right]}{(bf-ag)h}+$$
$$\frac{4Bn\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)^3\text{PolyLog}\left[2,\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right]}{(bf-ag)h}+\frac{1}{(bf-ag)h}$$
$$12B^2n^2\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)^2\text{PolyLog}\left[3,\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right]+$$
$$\frac{24B^3n^3\left(A+B\,\text{Log}\left[e(a+bx)^n(c+dx)^{-n}\right]\right)\text{PolyLog}\left[4,\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right]}{(bf-ag)h}+$$
$$\frac{24B^4n^4\,\text{PolyLog}\left[5,\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right]}{(bf-ag)h}$$

Result (type 4, 1021 leaves, 20 steps):

$$\frac{A^4 \operatorname{Log}[a+b x]}{(b f-a g) h}-\frac{A^4 \operatorname{Log}[f+g x]}{(b f-a g) h}-\frac{4 A^3 B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \operatorname{Log}\left[-\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}-$$
$$\frac{6 A^2 B^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2 \operatorname{Log}\left[-\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}-$$
$$\frac{4 A B^3 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3 \operatorname{Log}\left[-\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}-$$
$$\frac{B^4 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^4 \operatorname{Log}\left[-\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}+\frac{4 A^3 B n \operatorname{PolyLog}\left[2, 1+\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}+$$
$$\frac{12 A^2 B^2 n \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \operatorname{PolyLog}\left[2, 1+\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}+$$
$$\frac{12 A B^3 n \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2 \operatorname{PolyLog}\left[2, 1+\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}+$$
$$\frac{4 B^4 n \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3 \operatorname{PolyLog}\left[2, 1+\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}+$$
$$\frac{12 A^2 B^2 n^2 \operatorname{PolyLog}\left[3, 1+\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}+$$
$$\frac{24 A B^3 n^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \operatorname{PolyLog}\left[3, 1+\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}+$$
$$\frac{12 B^4 n^2 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2 \operatorname{PolyLog}\left[3, 1+\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}+$$
$$\frac{24 A B^3 n^3 \operatorname{PolyLog}\left[4, 1+\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}+$$
$$\frac{24 B^4 n^3 \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \operatorname{PolyLog}\left[4, 1+\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}+$$
$$\frac{24 B^4 n^4 \operatorname{PolyLog}\left[5, 1+\frac{(b c-a d) (f+g x)}{(d f-c g) (a+b x)}\right]}{(b f-a g) h}$$

Problem 250: Result valid but suboptimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(f+g x) (a h+b h x)} \, dx$$

Optimal (type 4, 282 leaves, 7 steps):

$$-\frac{\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3\,\mathrm{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{3\,B\,n\,\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,\mathrm{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,B^2\,n^2\,\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\mathrm{PolyLog}\left[3,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,B^3\,n^3\,\mathrm{PolyLog}\left[4,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 4, 656 leaves, 15 steps):

$$\frac{A^3\,\mathrm{Log}[a+b\,x]}{(b\,f-a\,g)\,h}-\frac{A^3\,\mathrm{Log}[f+g\,x]}{(b\,f-a\,g)\,h}-\frac{3\,A^2\,B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}-$$
$$\frac{3\,A\,B^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2\,\mathrm{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}-$$
$$\frac{B^3\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^3\,\mathrm{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{3\,A^2\,B\,n\,\mathrm{PolyLog}\left[2,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,A\,B^2\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{PolyLog}\left[2,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{3\,B^3\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2\,\mathrm{PolyLog}\left[2,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,A\,B^2\,n^2\,\mathrm{PolyLog}\left[3,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,B^3\,n^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{PolyLog}\left[3,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,B^3\,n^3\,\mathrm{PolyLog}\left[4,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Problem 251: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{(f+g\,x)\,(a\,h+b\,h\,x)}\,dx$$

Optimal (type 4, 203 leaves, 6 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,\text{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,B\,n\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 4, 371 leaves, 11 steps):

$$\frac{A^2\,\text{Log}[a+b\,x]}{(b\,f-a\,g)\,h}-\frac{A^2\,\text{Log}[f+g\,x]}{(b\,f-a\,g)\,h}-\frac{2\,A\,B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}-\frac{B^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,A\,B\,n\,\text{PolyLog}\left[2,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,B^2\,n\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[2,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Problem 252: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{(f+g\,x)\,(a\,h+b\,h\,x)}\,dx$$

Optimal (type 4, 123 leaves, 5 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{B\,n\,\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 4, 163 leaves, 8 steps):

$$\frac{A\,\text{Log}[a+b\,x]}{(b\,f-a\,g)\,h}-\frac{A\,\text{Log}[f+g\,x]}{(b\,f-a\,g)\,h}-\frac{B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{B\,n\,\text{PolyLog}\left[2,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Problem 253: Rubi result verified and simpler than optimal antiderivative.

$$\int\frac{1}{(f+g\,x)\,(a\,h+b\,h\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}\,dx$$

Optimal (type 9, 81 leaves, 1 step):

$$\text{Subst}\left[\text{Unintegrable}\left[\frac{1}{(f+g\,x)\,(a\,h+b\,h\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)},\,x\right],\,e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n,\,e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]$$

Result (type 8, 102 leaves, 2 steps):

$$\frac{b\,\text{CannotIntegrate}\left[\frac{1}{(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)},\,x\right]}{(b\,f-a\,g)\,h}-\frac{g\,\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)},\,x\right]}{(b\,f-a\,g)\,h}$$

Problem 254: Rubi result verified and simpler than optimal antiderivative.

$$\int\frac{1}{(f+g\,x)\,(a\,h+b\,h\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}\,dx$$

Optimal (type 9, 81 leaves, 1 step):

$$\text{Subst}\left[\text{Unintegrable}\left[\frac{1}{(f+g\,x)\,(a\,h+b\,h\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right],\,e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n,\,e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]$$

Result (type 8, 102 leaves, 2 steps):

$$\frac{b\,\text{CannotIntegrate}\left[\frac{1}{(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2},\,x\right]}{(b\,f-a\,g)\,h}-\frac{g\,\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2},\,x\right]}{(b\,f-a\,g)\,h}$$

Problem 259: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{a\,f\,h+b\,g\,h\,x^2+h\,(b\,f\,x+a\,g\,x)}\,dx$$

Optimal (type 4, 282 leaves, 8 steps):

$$-\frac{\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3\,\mathrm{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{3\,B\,n\,\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,\mathrm{PolyLog}\left[2,\,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,B^2\,n^2\,\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\mathrm{PolyLog}\left[3,\,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,B^3\,n^3\,\mathrm{PolyLog}\left[4,\,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 4, 656 leaves, 17 steps):

$$\frac{A^3\,\mathrm{Log}[a+b\,x]}{(b\,f-a\,g)\,h}-\frac{A^3\,\mathrm{Log}[f+g\,x]}{(b\,f-a\,g)\,h}-\frac{3\,A^2\,B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}-$$
$$\frac{3\,A\,B^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2\,\mathrm{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}-$$
$$\frac{B^3\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^3\,\mathrm{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{3\,A^2\,B\,n\,\mathrm{PolyLog}\left[2,\,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,A\,B^2\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{PolyLog}\left[2,\,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{3\,B^3\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2\,\mathrm{PolyLog}\left[2,\,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,A\,B^2\,n^2\,\mathrm{PolyLog}\left[3,\,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,B^3\,n^2\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\mathrm{PolyLog}\left[3,\,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$
$$\frac{6\,B^3\,n^3\,\mathrm{PolyLog}\left[4,\,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Problem 260: Result valid but suboptimal antiderivative.

$$\int\frac{\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{a\,f\,h+b\,g\,h\,x^2+h\,(b\,f\,x+a\,g\,x)}\,dx$$

Optimal (type 4, 203 leaves, 7 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,\text{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,B\,n\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[2,\,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,\,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 4, 371 leaves, 13 steps):

$$\frac{A^2\,\text{Log}[a+b\,x]}{(b\,f-a\,g)\,h}-\frac{A^2\,\text{Log}[f+g\,x]}{(b\,f-a\,g)\,h}-\frac{2\,A\,B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}-\frac{B^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,A\,B\,n\,\text{PolyLog}\left[2,\,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,B^2\,n\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[2,\,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,\,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Problem 261: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{a\,f\,h+b\,g\,h\,x^2+h\,(b\,f\,x+a\,g\,x)}\,dx$$

Optimal (type 4, 123 leaves, 6 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{B\,n\,\text{PolyLog}\left[2,\,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 4, 163 leaves, 10 steps):

$$\frac{A\,\text{Log}[a+b\,x]}{(b\,f-a\,g)\,h}-\frac{A\,\text{Log}[f+g\,x]}{(b\,f-a\,g)\,h}-\frac{B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{B\,n\,\text{PolyLog}\left[2,\,1+\frac{(b\,c-a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Problem 262: Rubi result verified and simpler than optimal antiderivative.

$$\int\frac{1}{\left(a\,f\,h+b\,g\,h\,x^2+h\,(b\,f\,x+a\,g\,x)\right)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}\,dx$$

Optimal (type 9, 82 leaves, 3 steps):

$$\frac{1}{h}\text{Subst}\left[\text{Unintegrable}\left[\frac{1}{(a+b\,x)\,(f+g\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)},\,x\right],\right.$$
$$\left.e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n,\,e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]$$

Result (type 8, 102 leaves, 4 steps):

$$\frac{b\,\text{CannotIntegrate}\left[\frac{1}{(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)},\,x\right]}{(b\,f-a\,g)\,h}-$$
$$\frac{g\,\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)},\,x\right]}{(b\,f-a\,g)\,h}$$

Problem 263: Rubi result verified and simpler than optimal antiderivative.

$$\int\left(1\middle/\left(\left(a\,f\,h+b\,g\,h\,x^2+h\,(b\,f\,x+a\,g\,x)\right)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\right)\right)\,dx$$

Optimal (type 9, 82 leaves, 3 steps):

$$\frac{1}{h}\text{Subst}\left[\text{Unintegrable}\left[\frac{1}{(a+b\,x)\,(f+g\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2},\,x\right],\right.$$
$$\left.e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n,\,e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]$$

Result (type 8, 102 leaves, 4 steps):

$$\frac{b\,\text{CannotIntegrate}\left[\frac{1}{(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2},\,x\right]}{(b\,f-a\,g)\,h}-$$
$$\frac{g\,\text{CannotIntegrate}\left[\frac{1}{(f+g\,x)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2},\,x\right]}{(b\,f-a\,g)\,h}$$

Test results for the 108 problems in "3.2.3 u log(e (f (a+b x)^p (c+d x)^q)^r)^s.m"

Problem 1: Result valid but suboptimal antiderivative.

$$\int\left(f+\frac{g}{x}\right)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,dx$$

Optimal (type 4, 404 leaves, 16 steps):

$$-\frac{B\,(b\,c-a\,d)\,g^3\,n}{2\,a\,c\,x}+A\,f^3\,x-\frac{1}{2}\,B\left(\frac{b^2}{a^2}-\frac{d^2}{c^2}\right)g^3\,n\,\mathrm{Log}[x]+\frac{b^2\,B\,g^3\,n\,\mathrm{Log}[a+b\,x]}{2\,a^2}-$$
$$3\,B\,f^2\,g\,n\,\mathrm{Log}[x]\,\mathrm{Log}\left[1+\frac{b\,x}{a}\right]+\frac{B\,f^3\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b}-\frac{g^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,x^2}+$$
$$\frac{3\,(b\,c-a\,d)\,f\,g^2\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{a\,(c+d\,x)\,\left(a-\frac{c\,(a+b\,x)}{c+d\,x}\right)}+3\,f^2\,g\,\mathrm{Log}[x]\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)-$$
$$\frac{B\,(b\,c-a\,d)\,f^3\,n\,\mathrm{Log}[c+d\,x]}{b\,d}-\frac{B\,d^2\,g^3\,n\,\mathrm{Log}[c+d\,x]}{2\,c^2}+3\,B\,f^2\,g\,n\,\mathrm{Log}[x]\,\mathrm{Log}\left[1+\frac{d\,x}{c}\right]+$$
$$\frac{3\,B\,(b\,c-a\,d)\,f\,g^2\,n\,\mathrm{Log}\left[a-\frac{c\,(a+b\,x)}{c+d\,x}\right]}{a\,c}-3\,B\,f^2\,g\,n\,\mathrm{PolyLog}\left[2,\,-\frac{b\,x}{a}\right]+3\,B\,f^2\,g\,n\,\mathrm{PolyLog}\left[2,\,-\frac{d\,x}{c}\right]$$

Result (type 4, 385 leaves, 20 steps):

$$-\frac{B\,(b\,c-a\,d)\,g^3\,n}{2\,a\,c\,x}+A\,f^3\,x+\frac{3\,B\,(b\,c-a\,d)\,f\,g^2\,n\,\mathrm{Log}[x]}{a\,c}-$$
$$\frac{1}{2}\,B\left(\frac{b^2}{a^2}-\frac{d^2}{c^2}\right)g^3\,n\,\mathrm{Log}[x]-\frac{3\,b\,B\,f\,g^2\,n\,\mathrm{Log}[a+b\,x]}{a}+\frac{b^2\,B\,g^3\,n\,\mathrm{Log}[a+b\,x]}{2\,a^2}-$$
$$3\,B\,f^2\,g\,n\,\mathrm{Log}[x]\,\mathrm{Log}\left[1+\frac{b\,x}{a}\right]+\frac{B\,f^3\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b}-\frac{g^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,x^2}-$$
$$\frac{3\,f\,g^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{x}+3\,f^2\,g\,\mathrm{Log}[x]\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)-$$
$$\frac{B\,(b\,c-a\,d)\,f^3\,n\,\mathrm{Log}[c+d\,x]}{b\,d}+\frac{3\,B\,d\,f\,g^2\,n\,\mathrm{Log}[c+d\,x]}{c}-\frac{B\,d^2\,g^3\,n\,\mathrm{Log}[c+d\,x]}{2\,c^2}+$$
$$3\,B\,f^2\,g\,n\,\mathrm{Log}[x]\,\mathrm{Log}\left[1+\frac{d\,x}{c}\right]-3\,B\,f^2\,g\,n\,\mathrm{PolyLog}\left[2,\,-\frac{b\,x}{a}\right]+3\,B\,f^2\,g\,n\,\mathrm{PolyLog}\left[2,\,-\frac{d\,x}{c}\right]$$

Problem 2: Result valid but suboptimal antiderivative.

$$\int\left(f+\frac{g}{x}\right)^2\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)dx$$

Optimal (type 4, 263 leaves, 13 steps):

$$A\,f^2\,x-2\,B\,f\,g\,n\,\mathrm{Log}[x]\,\mathrm{Log}\left[1+\frac{b\,x}{a}\right]+\frac{B\,f^2\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b}+$$
$$\frac{(b\,c-a\,d)\,g^2\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{a\,(c+d\,x)\,\left(a-\frac{c\,(a+b\,x)}{c+d\,x}\right)}+2\,f\,g\,\mathrm{Log}[x]\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)-$$
$$\frac{B\,(b\,c-a\,d)\,f^2\,n\,\mathrm{Log}[c+d\,x]}{b\,d}+2\,B\,f\,g\,n\,\mathrm{Log}[x]\,\mathrm{Log}\left[1+\frac{d\,x}{c}\right]+$$
$$\frac{B\,(b\,c-a\,d)\,g^2\,n\,\mathrm{Log}\left[a-\frac{c\,(a+b\,x)}{c+d\,x}\right]}{a\,c}-2\,B\,f\,g\,n\,\mathrm{PolyLog}\left[2,\,-\frac{b\,x}{a}\right]+2\,B\,f\,g\,n\,\mathrm{PolyLog}\left[2,\,-\frac{d\,x}{c}\right]$$

Result (type 4, 242 leaves, 16 steps):

$$A f^2 x+\frac{B (b c-a d) g^2 n \operatorname{Log}[x]}{a c}-\frac{b B g^2 n \operatorname{Log}[a+b x]}{a}-2 B f g n \operatorname{Log}[x] \operatorname{Log}\left[1+\frac{b x}{a}\right]+\frac{B f^2 (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{b}-\frac{g^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{x}+2 f g \operatorname{Log}[x] \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)-\frac{B (b c-a d) f^2 n \operatorname{Log}[c+d x]}{b d}+\frac{B d g^2 n \operatorname{Log}[c+d x]}{c}+2 B f g n \operatorname{Log}[x] \operatorname{Log}\left[1+\frac{d x}{c}\right]-2 B f g n \operatorname{PolyLog}\left[2,-\frac{b x}{a}\right]+2 B f g n \operatorname{PolyLog}\left[2,-\frac{d x}{c}\right]$$

Problem 3: Result optimal but 2 more steps used.

$$\int \left(f+\frac{g}{x}\right) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) dx$$

Optimal (type 4, 143 leaves, 10 steps):

$$A f x-B g n \operatorname{Log}[x] \operatorname{Log}\left[1+\frac{b x}{a}\right]+\frac{B f (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{b}+g \operatorname{Log}[x] \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)-\frac{B (b c-a d) f n \operatorname{Log}[c+d x]}{b d}+B g n \operatorname{Log}[x] \operatorname{Log}\left[1+\frac{d x}{c}\right]-B g n \operatorname{PolyLog}\left[2,-\frac{b x}{a}\right]+B g n \operatorname{PolyLog}\left[2,-\frac{d x}{c}\right]$$

Result (type 4, 143 leaves, 12 steps):

$$A f x-B g n \operatorname{Log}[x] \operatorname{Log}\left[1+\frac{b x}{a}\right]+\frac{B f (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{b}+g \operatorname{Log}[x] \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)-\frac{B (b c-a d) f n \operatorname{Log}[c+d x]}{b d}+B g n \operatorname{Log}[x] \operatorname{Log}\left[1+\frac{d x}{c}\right]-B g n \operatorname{PolyLog}\left[2,-\frac{b x}{a}\right]+B g n \operatorname{PolyLog}\left[2,-\frac{d x}{c}\right]$$

Problem 4: Result optimal but 2 more steps used.

$$\int \frac{A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{f+\frac{g}{x}} dx$$

Optimal (type 4, 217 leaves, 12 steps):

$$\frac{A\,x}{f}+\frac{B\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b\,f}-\frac{B\,(b\,c-a\,d)\,n\,\mathrm{Log}[c+d\,x]}{b\,d\,f}+\frac{B\,g\,n\,\mathrm{Log}\left[\frac{f\,(a+b\,x)}{a\,f-b\,g}\right]\,\mathrm{Log}[g+f\,x]}{f^2}-\frac{g\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[g+f\,x]}{f^2}-\frac{B\,g\,n\,\mathrm{Log}\left[\frac{f\,(c+d\,x)}{c\,f-d\,g}\right]\,\mathrm{Log}[g+f\,x]}{f^2}+\frac{B\,g\,n\,\mathrm{PolyLog}\left[2,-\frac{b\,(g+f\,x)}{a\,f-b\,g}\right]}{f^2}-\frac{B\,g\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(g+f\,x)}{c\,f-d\,g}\right]}{f^2}$$

Result (type 4, 217 leaves, 14 steps):

$$\frac{A\,x}{f}+\frac{B\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b\,f}-\frac{B\,(b\,c-a\,d)\,n\,\mathrm{Log}[c+d\,x]}{b\,d\,f}+\frac{B\,g\,n\,\mathrm{Log}\left[\frac{f\,(a+b\,x)}{a\,f-b\,g}\right]\,\mathrm{Log}[g+f\,x]}{f^2}-\frac{g\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[g+f\,x]}{f^2}-\frac{B\,g\,n\,\mathrm{Log}\left[\frac{f\,(c+d\,x)}{c\,f-d\,g}\right]\,\mathrm{Log}[g+f\,x]}{f^2}+\frac{B\,g\,n\,\mathrm{PolyLog}\left[2,-\frac{b\,(g+f\,x)}{a\,f-b\,g}\right]}{f^2}-\frac{B\,g\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(g+f\,x)}{c\,f-d\,g}\right]}{f^2}$$

Problem 5: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{\left(f+\frac{g}{x}\right)^2}\,dx$$

Optimal (type 4, 322 leaves, 15 steps):

$$\frac{A\,x}{f^2}+\frac{B\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b\,f^2}-\frac{g^2\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{f^2\,(a\,f-b\,g)\,(g+f\,x)}-\frac{B\,(b\,c-a\,d)\,n\,\mathrm{Log}[c+d\,x]}{b\,d\,f^2}+\frac{2\,B\,g\,n\,\mathrm{Log}\left[\frac{f\,(a+b\,x)}{a\,f-b\,g}\right]\,\mathrm{Log}[g+f\,x]}{f^3}-\frac{2\,g\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[g+f\,x]}{f^3}-\frac{2\,B\,g\,n\,\mathrm{Log}\left[\frac{f\,(c+d\,x)}{c\,f-d\,g}\right]\,\mathrm{Log}[g+f\,x]}{f^3}+\frac{B\,(b\,c-a\,d)\,g^2\,n\,\mathrm{Log}\left[\frac{g+f\,x}{c+d\,x}\right]}{f^2\,(a\,f-b\,g)\,(c\,f-d\,g)}+\frac{2\,B\,g\,n\,\mathrm{PolyLog}\left[2,-\frac{b\,(g+f\,x)}{a\,f-b\,g}\right]}{f^3}-\frac{2\,B\,g\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(g+f\,x)}{c\,f-d\,g}\right]}{f^3}$$

Result (type 4, 352 leaves, 18 steps):

$$\frac{A\,x}{f^2}-\frac{b\,B\,g^2\,n\,\mathrm{Log}[a+b\,x]}{f^3\,(a\,f-b\,g)}+\frac{B\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b\,f^2}-\frac{g^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{f^3\,(g+f\,x)}-$$
$$\frac{B\,(b\,c-a\,d)\,n\,\mathrm{Log}[c+d\,x]}{b\,d\,f^2}+\frac{B\,d\,g^2\,n\,\mathrm{Log}[c+d\,x]}{f^3\,(c\,f-d\,g)}+\frac{B\,(b\,c-a\,d)\,g^2\,n\,\mathrm{Log}[g+f\,x]}{f^2\,(a\,f-b\,g)\,(c\,f-d\,g)}+$$
$$\frac{2\,B\,g\,n\,\mathrm{Log}\left[\frac{f\,(a+b\,x)}{a\,f-b\,g}\right]\,\mathrm{Log}[g+f\,x]}{f^3}-\frac{2\,g\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[g+f\,x]}{f^3}-$$
$$\frac{2\,B\,g\,n\,\mathrm{Log}\left[\frac{f\,(c+d\,x)}{c\,f-d\,g}\right]\,\mathrm{Log}[g+f\,x]}{f^3}+\frac{2\,B\,g\,n\,\mathrm{PolyLog}\left[2,-\frac{b\,(g+f\,x)}{a\,f-b\,g}\right]}{f^3}-\frac{2\,B\,g\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(g+f\,x)}{c\,f-d\,g}\right]}{f^3}$$

Problem 6: Result valid but suboptimal antiderivative.

$$\int\frac{A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{\left(f+\frac{g}{x}\right)^3}\,dx$$

Optimal (type 4, 531 leaves, 18 steps):

$$\frac{A\,x}{f^3}+\frac{B\,(b\,c-a\,d)\,g^3\,n}{2\,f^3\,(a\,f-b\,g)\,(c\,f-d\,g)\,(g+f\,x)}-\frac{b^2\,B\,g^3\,n\,\mathrm{Log}[a+b\,x]}{2\,f^4\,(a\,f-b\,g)^2}+$$
$$\frac{B\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{b\,f^3}+\frac{g^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,f^4\,(g+f\,x)^2}-$$
$$\frac{3\,g^2\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{f^3\,(a\,f-b\,g)\,(g+f\,x)}-\frac{B\,(b\,c-a\,d)\,n\,\mathrm{Log}[c+d\,x]}{b\,d\,f^3}+\frac{B\,d^2\,g^3\,n\,\mathrm{Log}[c+d\,x]}{2\,f^4\,(c\,f-d\,g)^2}+$$
$$\frac{B\,(b\,c-a\,d)\,g^3\,(b\,c\,f+a\,d\,f-2\,b\,d\,g)\,n\,\mathrm{Log}[g+f\,x]}{2\,f^3\,(a\,f-b\,g)^2\,(c\,f-d\,g)^2}+\frac{3\,B\,g\,n\,\mathrm{Log}\left[\frac{f\,(a+b\,x)}{a\,f-b\,g}\right]\,\mathrm{Log}[g+f\,x]}{f^4}-$$
$$\frac{3\,g\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}[g+f\,x]}{f^4}-\frac{3\,B\,g\,n\,\mathrm{Log}\left[\frac{f\,(c+d\,x)}{c\,f-d\,g}\right]\,\mathrm{Log}[g+f\,x]}{f^4}+$$
$$\frac{3\,B\,(b\,c-a\,d)\,g^2\,n\,\mathrm{Log}\left[\frac{g+f\,x}{c+d\,x}\right]}{f^3\,(a\,f-b\,g)\,(c\,f-d\,g)}+\frac{3\,B\,g\,n\,\mathrm{PolyLog}\left[2,-\frac{b\,(g+f\,x)}{a\,f-b\,g}\right]}{f^4}-\frac{3\,B\,g\,n\,\mathrm{PolyLog}\left[2,-\frac{d\,(g+f\,x)}{c\,f-d\,g}\right]}{f^4}$$

Result (type 4, 562 leaves, 22 steps):

$$\frac{A x}{f^3}+\frac{B (b c-a d) g^3 n}{2 f^3 (a f-b g) (c f-d g) (g+f x)}-\frac{b^2 B g^3 n \text{Log}[a+b x]}{2 f^4 (a f-b g)^2}-\frac{3 b B g^2 n \text{Log}[a+b x]}{f^4 (a f-b g)}+$$
$$\frac{B (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{b f^3}+\frac{g^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 f^4 (g+f x)^2}-\frac{3 g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{f^4 (g+f x)}-$$
$$\frac{B (b c-a d) n \text{Log}[c+d x]}{b d f^3}+\frac{B d^2 g^3 n \text{Log}[c+d x]}{2 f^4 (c f-d g)^2}+\frac{3 B d g^2 n \text{Log}[c+d x]}{f^4 (c f-d g)}+$$
$$\frac{3 B (b c-a d) g^2 n \text{Log}[g+f x]}{f^3 (a f-b g) (c f-d g)}+\frac{B (b c-a d) g^3 (b c f+a d f-2 b d g) n \text{Log}[g+f x]}{2 f^3 (a f-b g)^2 (c f-d g)^2}+$$
$$\frac{3 B g n \text{Log}\left[\frac{f (a+b x)}{a f-b g}\right] \text{Log}[g+f x]}{f^4}-\frac{3 g \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}[g+f x]}{f^4}-$$
$$\frac{3 B g n \text{Log}\left[\frac{f (c+d x)}{c f-d g}\right] \text{Log}[g+f x]}{f^4}+\frac{3 B g n \text{PolyLog}\left[2,-\frac{b (g+f x)}{a f-b g}\right]}{f^4}-\frac{3 B g n \text{PolyLog}\left[2,-\frac{d (g+f x)}{c f-d g}\right]}{f^4}$$

Problem 39: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2}{g+h x} \, dx$$

Optimal (type 4, 1471 leaves, ? steps):

$$\frac{p q r^2 \text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[\frac{(b g-a h) (c+d x)}{(d g-c h) (a+b x)}\right]^2}{h}+\frac{p^2 r^2 \text{Log}[a+b x]^2 \text{Log}[g+h x]}{h}+$$
$$\frac{2 p q r^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}[g+h x]}{h}+\frac{q^2 r^2 \text{Log}[c+d x]^2 \text{Log}[g+h x]}{h}-$$
$$\frac{2 p r \text{Log}[a+b x] \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right] \text{Log}[g+h x]}{h}-$$
$$\frac{2 q r \text{Log}[c+d x] \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right] \text{Log}[g+h x]}{h}+$$
$$\frac{\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2 \text{Log}[g+h x]}{h}-\frac{p^2 r^2 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]}{h}-$$
$$\frac{2 p q r^2 \text{Log}[a+b x] \text{Log}\left[-\frac{h (c+d x)}{d g-c h}\right] \text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]}{h}+\frac{p q r^2 \text{Log}\left[-\frac{h (c+d x)}{d g-c h}\right]^2 \text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]}{h}-$$
$$\frac{2 p q r^2 \text{Log}\left[-\frac{h (c+d x)}{d g-c h}\right] \text{Log}\left[\frac{(b g-a h) (c+d x)}{(d g-c h) (a+b x)}\right] \text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]}{h}+\frac{p q r^2 \text{Log}\left[\frac{(b g-a h) (c+d x)}{(d g-c h) (a+b x)}\right]^2 \text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]}{h}+$$
$$\frac{2 p r \text{Log}[a+b x] \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right] \text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]}{h}-$$
$$\frac{2 p q r^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[\frac{d (g+h x)}{d g-c h}\right]}{h}-\frac{q^2 r^2 \text{Log}[c+d x]^2 \text{Log}\left[\frac{d (g+h x)}{d g-c h}\right]}{h}+$$

$$\frac{2\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h}-\frac{p\,q\,r^2\,\text{Log}\left[-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]^2\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h}+$$

$$\frac{2\,p\,q\,r^2\,\text{Log}\left[-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]\,\text{Log}\left[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h}+$$

$$\frac{2\,q\,r\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h}-$$

$$\frac{p\,q\,r^2\,\text{Log}\left[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]^2\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(g+h\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]}{h}-\frac{1}{h}$$

$$2\,p\,r\,\left(q\,r\,\text{Log}\left[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\,\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]+$$

$$\frac{1}{h}2\,q\,r\,\left(p\,r\,\text{Log}\left[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]+\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\,\text{PolyLog}\left[2,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]+$$

$$\frac{2\,p\,q\,r^2\,\text{Log}\left[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{h}-$$

$$\frac{2\,p\,q\,r^2\,\text{Log}\left[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]\,\text{PolyLog}\left[2,\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]}{h}-\frac{2\,p^2\,r^2\,\text{PolyLog}\left[3,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h}-$$

$$\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h}-\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]}{h}-\frac{2\,q^2\,r^2\,\text{PolyLog}\left[3,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]}{h}-$$

$$\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{h}+\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]}{h}$$

Result (type 4, 2096 leaves, 29 steps):

$$-\frac{\text{Log}\left[(a+b\,x)^{p\,r}\right]^2\,\text{Log}[g+h\,x]}{h}-\frac{2\,p\,q\,r^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]\,\text{Log}[g+h\,x]}{h}-$$

$$\frac{2\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}[g+h\,x]}{h}+$$

$$\frac{2\,q\,r\,\left(p\,r\,\text{Log}[a+b\,x]-\text{Log}\left[(a+b\,x)^{p\,r}\right]\right)\,\text{Log}\left[-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]\,\text{Log}[g+h\,x]}{h}+$$

$$\frac{2\,p\,r\,\text{Log}\left[-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]\,\left(q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[(c+d\,x)^{q\,r}\right]\right)\,\text{Log}[g+h\,x]}{h}-$$

$$\frac{\text{Log}\left[(c+d\,x)^{q\,r}\right]^2\,\text{Log}[g+h\,x]}{h}+\frac{1}{h}2\,p\,r\,\text{Log}\left[-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]$$

$$\left(\text{Log}\left[(a+b\,x)^{p\,r}\right]+\text{Log}\left[(c+d\,x)^{q\,r}\right]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\,\text{Log}[g+h\,x]+\frac{1}{h}$$

$$2\,q\,r\,\text{Log}\left[-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]\,\left(\text{Log}\left[(a+b\,x)^{p\,r}\right]+\text{Log}\left[(c+d\,x)^{q\,r}\right]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)$$

$$\text{Log}[g+h\,x]+\frac{\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2\,\text{Log}[g+h\,x]}{h}+$$

$$\frac{\text{Log}\left[\left(a+b\,x\right)^{p\,r}\right]^2\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h}+\frac{\text{Log}\left[\left(c+d\,x\right)^{q\,r}\right]^2\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h}-\frac{1}{h}p\,q\,r^2$$

$$\left(\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{Log}\left[\frac{b\,g-a\,h}{b\,(g+h\,x)}\right]-\text{Log}\left[\frac{(b\,g-a\,h)\,(c+d\,x)}{(b\,c-a\,d)\,(g+h\,x)}\right]\right)\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(g+h\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]^2+\frac{1}{h}$$

$$p\,q\,r^2\left(\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-\text{Log}\left[-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]\right)\left(\text{Log}[a+b\,x]+\text{Log}\left[-\frac{(b\,c-a\,d)\,(g+h\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]\right)^2-\frac{1}{h}p\,q\,r^2$$

$$\left(\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]+\text{Log}\left[\frac{d\,g-c\,h}{d\,(g+h\,x)}\right]-\text{Log}\left[-\frac{(d\,g-c\,h)\,(a+b\,x)}{(b\,c-a\,d)\,(g+h\,x)}\right]\right)\,\text{Log}\left[\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]^2+$$

$$\frac{1}{h}p\,q\,r^2\left(\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]-\text{Log}\left[-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]\right)\left(\text{Log}[c+d\,x]+\text{Log}\left[\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]\right)^2-$$

$$\frac{2\,p\,q\,r^2\left(\text{Log}[g+h\,x]-\text{Log}\left[-\frac{(b\,c-a\,d)\,(g+h\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]\right)\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{h}+$$

$$\frac{2\,p\,r\,\text{Log}\left[\left(a+b\,x\right)^{p\,r}\right]\,\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h}-$$

$$\frac{2\,p\,q\,r^2\left(\text{Log}[g+h\,x]-\text{Log}\left[\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h}+$$

$$\frac{2\,q\,r\,\text{Log}\left[\left(c+d\,x\right)^{q\,r}\right]\,\text{PolyLog}\left[2,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]}{h}+\frac{2\,p\,q\,r^2\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(g+h\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]\,\text{PolyLog}\left[2,\frac{h\,(a+b\,x)}{b\,(g+h\,x)}\right]}{h}-$$

$$\frac{2\,p\,q\,r^2\,\text{Log}\left[-\frac{(b\,c-a\,d)\,(g+h\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]\,\text{PolyLog}\left[2,-\frac{(d\,g-c\,h)\,(a+b\,x)}{(b\,c-a\,d)\,(g+h\,x)}\right]}{h}+$$

$$\frac{2\,p\,q\,r^2\,\text{Log}\left[\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]\,\text{PolyLog}\left[2,\frac{h\,(c+d\,x)}{d\,(g+h\,x)}\right]}{h}-$$

$$\frac{2\,p\,q\,r^2\,\text{Log}\left[\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]\,\text{PolyLog}\left[2,\frac{(b\,g-a\,h)\,(c+d\,x)}{(b\,c-a\,d)\,(g+h\,x)}\right]}{h}+$$

$$\frac{2\,p\,r\left(q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[\left(c+d\,x\right)^{q\,r}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h}+\frac{1}{h}$$

$$2\,p\,r\left(\text{Log}\left[\left(a+b\,x\right)^{p\,r}\right]+\text{Log}\left[\left(c+d\,x\right)^{q\,r}\right]-\text{Log}\left[e\left(f\left(a+b\,x\right)^{p}\left(c+d\,x\right)^{q}\right)^{r}\right]\right)$$

$$\text{PolyLog}\left[2,\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\frac{2\,p\,q\,r^2\left(\text{Log}[c+d\,x]+\text{Log}\left[\frac{(b\,c-a\,d)\,(g+h\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h}+$$

$$\frac{2\,q\,r\left(p\,r\,\text{Log}[a+b\,x]-\text{Log}\left[\left(a+b\,x\right)^{p\,r}\right]\right)\,\text{PolyLog}\left[2,\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h}+\frac{1}{h}2\,q\,r$$

$$\left(\text{Log}\left[\left(a+b\,x\right)^{p\,r}\right]+\text{Log}\left[\left(c+d\,x\right)^{q\,r}\right]-\text{Log}\left[e\left(f\left(a+b\,x\right)^{p}\left(c+d\,x\right)^{q}\right)^{r}\right]\right)\,\text{PolyLog}\left[2,\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-$$

$$\frac{2\,p\,q\,r^2\left(\text{Log}[a+b\,x]+\text{Log}\left[-\frac{(b\,c-a\,d)\,(g+h\,x)}{(d\,g-c\,h)\,(a+b\,x)}\right]\right)\,\text{PolyLog}\left[2,\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h}+\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{h}-$$

$$\frac{2\,p^2\,r^2\,\text{PolyLog}\left[3,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h}+\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h}-\frac{2\,q^2\,r^2\,\text{PolyLog}\left[3,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]}{h}+\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,\frac{h\,(a+b\,x)}{b\,(g+h\,x)}\right]}{h}-\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,-\frac{(d\,g-c\,h)\,(a+b\,x)}{(b\,c-a\,d)\,(g+h\,x)}\right]}{h}+\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,\frac{h\,(c+d\,x)}{d\,(g+h\,x)}\right]}{h}-\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,\frac{(b\,g-a\,h)\,(c+d\,x)}{(b\,c-a\,d)\,(g+h\,x)}\right]}{h}+\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h}+\frac{2\,p\,q\,r^2\,\text{PolyLog}\left[3,\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h}$$

Problem 40: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2}{(g+h\,x)^2}\,dx$$

Optimal (type 4, 832 leaves, 31 steps):

$$\frac{2\,b\,p\,q\,r^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{h\,(b\,g-a\,h)}+\frac{2\,d\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h\,(d\,g-c\,h)}-\frac{1}{h\,(b\,g-a\,h)}2\,b\,p\,r\,\text{Log}[a+b\,x]\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)-\frac{1}{h\,(d\,g-c\,h)}2\,d\,q\,r\,\text{Log}[c+d\,x]\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)-\frac{\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2}{h\,(g+h\,x)}+\frac{1}{h\,(b\,g-a\,h)}2\,b\,p\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\,\text{Log}[g+h\,x]+\frac{1}{h\,(d\,g-c\,h)}2\,d\,q\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\,\text{Log}[g+h\,x]-\frac{2\,d\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h\,(d\,g-c\,h)}-\frac{2\,b\,p\,q\,r^2\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h\,(b\,g-a\,h)}-\frac{2\,b\,p^2\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[1+\frac{b\,g-a\,h}{h\,(a+b\,x)}\right]}{h\,(b\,g-a\,h)}-\frac{2\,d\,q^2\,r^2\,\text{Log}[c+d\,x]\,\text{Log}\left[1+\frac{d\,g-c\,h}{h\,(c+d\,x)}\right]}{h\,(d\,g-c\,h)}+\frac{2\,b\,p^2\,r^2\,\text{PolyLog}\left[2,-\frac{b\,g-a\,h}{h\,(a+b\,x)}\right]}{h\,(b\,g-a\,h)}+\frac{2\,d\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{h\,(d\,g-c\,h)}-\frac{2\,d\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(d\,g-c\,h)}+\frac{2\,d\,q^2\,r^2\,\text{PolyLog}\left[2,-\frac{d\,g-c\,h}{h\,(c+d\,x)}\right]}{h\,(d\,g-c\,h)}+\frac{2\,b\,p\,q\,r^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h\,(b\,g-a\,h)}-\frac{2\,b\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]}{h\,(b\,g-a\,h)}$$

Result (type 4, 878 leaves, 35 steps):

$$\frac{b\,p^2\,r^2\,\text{Log}[a+b\,x]^2}{h\,(b\,g-a\,h)}+\frac{2\,b\,p\,q\,r^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{h\,(b\,g-a\,h)}+\frac{d\,q^2\,r^2\,\text{Log}[c+d\,x]^2}{h\,(d\,g-c\,h)}+$$
$$\frac{2\,d\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h\,(d\,g-c\,h)}-\frac{1}{h\,(b\,g-a\,h)}2\,b\,p\,r\,\text{Log}[a+b\,x]$$
$$\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)-\frac{1}{h\,(d\,g-c\,h)}$$
$$2\,d\,q\,r\,\text{Log}[c+d\,x]\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)-$$
$$\frac{\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2}{h\,(g+h\,x)}+\frac{1}{h\,(b\,g-a\,h)}2\,b\,p\,r$$
$$\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\,\text{Log}[g+h\,x]+\frac{1}{h\,(d\,g-c\,h)}$$
$$2\,d\,q\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\,\text{Log}[g+h\,x]-$$
$$\frac{2\,b\,p^2\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h\,(b\,g-a\,h)}-\frac{2\,d\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h\,(d\,g-c\,h)}-$$
$$\frac{2\,b\,p\,q\,r^2\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h\,(b\,g-a\,h)}-\frac{2\,d\,q^2\,r^2\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h\,(d\,g-c\,h)}+$$
$$\frac{2\,d\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{h\,(d\,g-c\,h)}-\frac{2\,b\,p^2\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(b\,g-a\,h)}-\frac{2\,d\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(d\,g-c\,h)}+$$
$$\frac{2\,b\,p\,q\,r^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h\,(b\,g-a\,h)}-\frac{2\,b\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]}{h\,(b\,g-a\,h)}-\frac{2\,d\,q^2\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]}{h\,(d\,g-c\,h)}$$

Problem 41: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2}{(g+h\,x)^3}\,dx$$

Optimal (type 4, 1304 leaves, 43 steps):

$$-\frac{b\,d\,p\,q\,r^2\,\text{Log}[a+b\,x]}{h\,(b\,g-a\,h)\,(d\,g-c\,h)}+\frac{d\,p\,q\,r^2\,\text{Log}[a+b\,x]}{h\,(d\,g-c\,h)\,(g+h\,x)}-\frac{b\,p^2\,r^2\,(a+b\,x)\,\text{Log}[a+b\,x]}{(b\,g-a\,h)^2\,(g+h\,x)}-$$
$$\frac{b\,d\,p\,q\,r^2\,\text{Log}[c+d\,x]}{h\,(b\,g-a\,h)\,(d\,g-c\,h)}+\frac{b\,p\,q\,r^2\,\text{Log}[c+d\,x]}{h\,(b\,g-a\,h)\,(g+h\,x)}-\frac{d\,q^2\,r^2\,(c+d\,x)\,\text{Log}[c+d\,x]}{(d\,g-c\,h)^2\,(g+h\,x)}+$$
$$\frac{b^2\,p\,q\,r^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{h\,(b\,g-a\,h)^2}+\frac{d^2\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h\,(d\,g-c\,h)^2}-$$
$$\left(b\,p\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\right)/$$
$$\left(h\,(b\,g-a\,h)\,(g+h\,x)\right)-$$
$$\left(d\,q\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\right)/$$
$$\left(h\,(d\,g-c\,h)\,(g+h\,x)\right)-\frac{1}{h\,(b\,g-a\,h)^2}b^2\,p\,r\,\text{Log}[a+b\,x]$$
$$\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)-\frac{1}{h\,(d\,g-c\,h)^2}$$
$$d^2\,q\,r\,\text{Log}[c+d\,x]\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)-$$
$$\frac{\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2}{2\,h\,(g+h\,x)^2}+\frac{b^2\,p^2\,r^2\,\text{Log}[g+h\,x]}{h\,(b\,g-a\,h)^2}+$$
$$\frac{2\,b\,d\,p\,q\,r^2\,\text{Log}[g+h\,x]}{h\,(b\,g-a\,h)\,(d\,g-c\,h)}+\frac{d^2\,q^2\,r^2\,\text{Log}[g+h\,x]}{h\,(d\,g-c\,h)^2}+\frac{1}{h\,(b\,g-a\,h)^2}$$
$$b^2\,p\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\,\text{Log}[g+h\,x]+$$
$$\frac{1}{h\,(d\,g-c\,h)^2}d^2\,q\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)$$
$$\text{Log}[g+h\,x]-\frac{d^2\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h\,(d\,g-c\,h)^2}-\frac{b^2\,p\,q\,r^2\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h\,(b\,g-a\,h)^2}-$$
$$\frac{b^2\,p^2\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[1+\frac{b\,g-a\,h}{h\,(a+b\,x)}\right]}{h\,(b\,g-a\,h)^2}-\frac{d^2\,q^2\,r^2\,\text{Log}[c+d\,x]\,\text{Log}\left[1+\frac{d\,g-c\,h}{h\,(c+d\,x)}\right]}{h\,(d\,g-c\,h)^2}+$$
$$\frac{b^2\,p^2\,r^2\,\text{PolyLog}\left[2,-\frac{b\,g-a\,h}{h\,(a+b\,x)}\right]}{h\,(b\,g-a\,h)^2}+\frac{d^2\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{h\,(d\,g-c\,h)^2}-\frac{d^2\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(d\,g-c\,h)^2}+$$
$$\frac{d^2\,q^2\,r^2\,\text{PolyLog}\left[2,-\frac{d\,g-c\,h}{h\,(c+d\,x)}\right]}{h\,(d\,g-c\,h)^2}+\frac{b^2\,p\,q\,r^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h\,(b\,g-a\,h)^2}-\frac{b^2\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]}{h\,(b\,g-a\,h)^2}$$

Result (type 4, 1362 leaves, 47 steps):

$$-\frac{b\,d\,p\,q\,r^2\,\text{Log}[a+b\,x]}{h\,(b\,g-a\,h)\,(d\,g-c\,h)}+\frac{d\,p\,q\,r^2\,\text{Log}[a+b\,x]}{h\,(d\,g-c\,h)\,(g+h\,x)}-\frac{b\,p^2\,r^2\,(a+b\,x)\,\text{Log}[a+b\,x]}{(b\,g-a\,h)^2\,(g+h\,x)}+$$

$$\frac{b^2\,p^2\,r^2\,\text{Log}[a+b\,x]^2}{2\,h\,(b\,g-a\,h)^2}-\frac{b\,d\,p\,q\,r^2\,\text{Log}[c+d\,x]}{h\,(b\,g-a\,h)\,(d\,g-c\,h)}+\frac{b\,p\,q\,r^2\,\text{Log}[c+d\,x]}{h\,(b\,g-a\,h)\,(g+h\,x)}-$$

$$\frac{d\,q^2\,r^2\,(c+d\,x)\,\text{Log}[c+d\,x]}{(d\,g-c\,h)^2\,(g+h\,x)}+\frac{b^2\,p\,q\,r^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{h\,(b\,g-a\,h)^2}+$$

$$\frac{d^2\,q^2\,r^2\,\text{Log}[c+d\,x]^2}{2\,h\,(d\,g-c\,h)^2}+\frac{d^2\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h\,(d\,g-c\,h)^2}-$$

$$\left(b\,p\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\right)\Big/$$
$$\left(h\,(b\,g-a\,h)\,(g+h\,x)\right)-$$
$$\left(d\,q\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\right)\Big/$$
$$\left(h\,(d\,g-c\,h)\,(g+h\,x)\right)-\frac{1}{h\,(b\,g-a\,h)^2}b^2\,p\,r\,\text{Log}[a+b\,x]$$
$$\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)-\frac{1}{h\,(d\,g-c\,h)^2}$$
$$d^2\,q\,r\,\text{Log}[c+d\,x]\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)-$$
$$\frac{\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2}{2\,h\,(g+h\,x)^2}+\frac{b^2\,p^2\,r^2\,\text{Log}[g+h\,x]}{h\,(b\,g-a\,h)^2}+$$
$$\frac{2\,b\,d\,p\,q\,r^2\,\text{Log}[g+h\,x]}{h\,(b\,g-a\,h)\,(d\,g-c\,h)}+\frac{d^2\,q^2\,r^2\,\text{Log}[g+h\,x]}{h\,(d\,g-c\,h)^2}+\frac{1}{h\,(b\,g-a\,h)^2}$$
$$b^2\,p\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\,\text{Log}[g+h\,x]+$$
$$\frac{1}{h\,(d\,g-c\,h)^2}d^2\,q\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)$$
$$\text{Log}[g+h\,x]-\frac{b^2\,p^2\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h\,(b\,g-a\,h)^2}-\frac{d^2\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h\,(d\,g-c\,h)^2}-$$
$$\frac{b^2\,p\,q\,r^2\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h\,(b\,g-a\,h)^2}-\frac{d^2\,q^2\,r^2\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h\,(d\,g-c\,h)^2}+$$
$$\frac{d^2\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{h\,(d\,g-c\,h)^2}-\frac{b^2\,p^2\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(b\,g-a\,h)^2}-\frac{d^2\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(d\,g-c\,h)^2}+$$
$$\frac{b^2\,p\,q\,r^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h\,(b\,g-a\,h)^2}-\frac{b^2\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]}{h\,(b\,g-a\,h)^2}-\frac{d^2\,q^2\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]}{h\,(d\,g-c\,h)^2}$$

Problem 42: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2}{(g+h\,x)^4}\,dx$$

Optimal (type 4, 1957 leaves, 57 steps) :

$$-\frac{b^2 p^2 r^2}{3 h (b g-a h)^2 (g+h x)}-\frac{2 b d p q r^2}{3 h (b g-a h) (d g-c h) (g+h x)}-\frac{d^2 q^2 r^2}{3 h (d g-c h)^2 (g+h x)}-\frac{b^3 p^2 r^2 \text{Log}[a+b x]}{3 h (b g-a h)^3}-\frac{2 b d^2 p q r^2 \text{Log}[a+b x]}{3 h (b g-a h) (d g-c h)^2}-\frac{b^2 d p q r^2 \text{Log}[a+b x]}{3 h (b g-a h)^2 (d g-c h)}+\frac{b p^2 r^2 \text{Log}[a+b x]}{3 h (b g-a h) (g+h x)^2}+\frac{d p q r^2 \text{Log}[a+b x]}{3 h (d g-c h) (g+h x)^2}+\frac{2 d^2 p q r^2 \text{Log}[a+b x]}{3 h (d g-c h)^2 (g+h x)}-\frac{2 b^2 p^2 r^2 (a+b x) \text{Log}[a+b x]}{3 (b g-a h)^3 (g+h x)}-\frac{b d^2 p q r^2 \text{Log}[c+d x]}{3 h (b g-a h) (d g-c h)^2}-\frac{2 b^2 d p q r^2 \text{Log}[c+d x]}{3 h (b g-a h)^2 (d g-c h)}-\frac{d^3 q^2 r^2 \text{Log}[c+d x]}{3 h (d g-c h)^3}+\frac{b p q r^2 \text{Log}[c+d x]}{3 h (b g-a h) (g+h x)^2}+\frac{d q^2 r^2 \text{Log}[c+d x]}{3 h (d g-c h) (g+h x)^2}+\frac{2 b^2 p q r^2 \text{Log}[c+d x]}{3 h (b g-a h)^2 (g+h x)}-\frac{2 d^2 q^2 r^2 (c+d x) \text{Log}[c+d x]}{3 (d g-c h)^3 (g+h x)}+\frac{2 b^3 p q r^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 h (b g-a h)^3}+\frac{2 d^3 p q r^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 h (d g-c h)^3}-$$

$$\left(b p r \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)\right)\Big/\left(3 h (b g-a h) (g+h x)^2\right)-$$

$$\left(d q r \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)\right)\Big/\left(3 h (d g-c h) (g+h x)^2\right)-$$

$$\left(2 b^2 p r \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)\right)\Big/\left(3 h (b g-a h)^2 (g+h x)\right)-$$

$$\left(2 d^2 q r \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)\right)\Big/\left(3 h (d g-c h)^2 (g+h x)\right)-\frac{1}{3 h (b g-a h)^3}2 b^3 p r \text{Log}[a+b x]$$

$$\left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)-\frac{1}{3 h (d g-c h)^3}$$

$$2 d^3 q r \text{Log}[c+d x] \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)-$$

$$\frac{\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2}{3 h (g+h x)^3}+\frac{b^3 p^2 r^2 \text{Log}[g+h x]}{h (b g-a h)^3}+\frac{b d^2 p q r^2 \text{Log}[g+h x]}{h (b g-a h) (d g-c h)^2}+\frac{b^2 d p q r^2 \text{Log}[g+h x]}{h (b g-a h)^2 (d g-c h)}+\frac{d^3 q^2 r^2 \text{Log}[g+h x]}{h (d g-c h)^3}+\frac{1}{3 h (b g-a h)^3}2 b^3 p r$$

$$\left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right) \text{Log}[g+h x]+\frac{1}{3 h (d g-c h)^3}$$

$$2 d^3 q r \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right) \text{Log}[g+h x]-$$

$$\frac{2 d^3 p q r^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]}{3 h (d g-c h)^3}-\frac{2 b^3 p q r^2 \text{Log}[c+d x] \text{Log}\left[\frac{d (g+h x)}{d g-c h}\right]}{3 h (b g-a h)^3}-$$

$$\frac{2 b^3 p^2 r^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[1+\frac{b g-a h}{h (a+b x)}\right]}{3 h (b g-a h)^3}-\frac{2 d^3 q^2 r^2 \operatorname{Log}[c+d x] \operatorname{Log}\left[1+\frac{d g-c h}{h (c+d x)}\right]}{3 h (d g-c h)^3}+$$
$$\frac{2 b^3 p^2 r^2 \operatorname{PolyLog}\left[2,-\frac{b g-a h}{h (a+b x)}\right]}{3 h (b g-a h)^3}+\frac{2 d^3 p q r^2 \operatorname{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 h (d g-c h)^3}-$$
$$\frac{2 d^3 p q r^2 \operatorname{PolyLog}\left[2,-\frac{h (a+b x)}{b g-a h}\right]}{3 h (d g-c h)^3}+\frac{2 d^3 q^2 r^2 \operatorname{PolyLog}\left[2,-\frac{d g-c h}{h (c+d x)}\right]}{3 h (d g-c h)^3}+$$
$$\frac{2 b^3 p q r^2 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 h (b g-a h)^3}-\frac{2 b^3 p q r^2 \operatorname{PolyLog}\left[2,-\frac{h (c+d x)}{d g-c h}\right]}{3 h (b g-a h)^3}$$

Result (type 4, 2013 leaves, 61 steps):

$$-\frac{b^2 p^2 r^2}{3 h (b g-a h)^2 (g+h x)}-\frac{2 b d p q r^2}{3 h (b g-a h) (d g-c h) (g+h x)}-\frac{d^2 q^2 r^2}{3 h (d g-c h)^2 (g+h x)}-$$
$$\frac{b^3 p^2 r^2 \operatorname{Log}[a+b x]}{3 h (b g-a h)^3}-\frac{2 b d^2 p q r^2 \operatorname{Log}[a+b x]}{3 h (b g-a h) (d g-c h)^2}-\frac{b^2 d p q r^2 \operatorname{Log}[a+b x]}{3 h (b g-a h)^2 (d g-c h)}+$$
$$\frac{b p^2 r^2 \operatorname{Log}[a+b x]}{3 h (b g-a h) (g+h x)^2}+\frac{d p q r^2 \operatorname{Log}[a+b x]}{3 h (d g-c h) (g+h x)^2}+\frac{2 d^2 p q r^2 \operatorname{Log}[a+b x]}{3 h (d g-c h)^2 (g+h x)}-$$
$$\frac{2 b^2 p^2 r^2 (a+b x) \operatorname{Log}[a+b x]}{3 (b g-a h)^3 (g+h x)}+\frac{b^3 p^2 r^2 \operatorname{Log}[a+b x]^2}{3 h (b g-a h)^3}-\frac{b d^2 p q r^2 \operatorname{Log}[c+d x]}{3 h (b g-a h) (d g-c h)^2}-$$
$$\frac{2 b^2 d p q r^2 \operatorname{Log}[c+d x]}{3 h (b g-a h)^2 (d g-c h)}-\frac{d^3 q^2 r^2 \operatorname{Log}[c+d x]}{3 h (d g-c h)^3}+\frac{b p q r^2 \operatorname{Log}[c+d x]}{3 h (b g-a h) (g+h x)^2}+$$
$$\frac{d q^2 r^2 \operatorname{Log}[c+d x]}{3 h (d g-c h) (g+h x)^2}+\frac{2 b^2 p q r^2 \operatorname{Log}[c+d x]}{3 h (b g-a h)^2 (g+h x)}-\frac{2 d^2 q^2 r^2 (c+d x) \operatorname{Log}[c+d x]}{3 (d g-c h)^3 (g+h x)}+$$
$$\frac{2 b^3 p q r^2 \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}[c+d x]}{3 h (b g-a h)^3}+\frac{d^3 q^2 r^2 \operatorname{Log}[c+d x]^2}{3 h (d g-c h)^3}+\frac{2 d^3 p q r^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 h (d g-c h)^3}-$$
$$\left(b p r \left(p r \operatorname{Log}[a+b x]+q r \operatorname{Log}[c+d x]-\operatorname{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)\right) \Big/$$
$$\left(3 h (b g-a h) (g+h x)^2\right)-$$
$$\left(d q r \left(p r \operatorname{Log}[a+b x]+q r \operatorname{Log}[c+d x]-\operatorname{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)\right) \Big/$$
$$\left(3 h (d g-c h) (g+h x)^2\right)-$$
$$\left(2 b^2 p r \left(p r \operatorname{Log}[a+b x]+q r \operatorname{Log}[c+d x]-\operatorname{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)\right) \Big/$$
$$\left(3 h (b g-a h)^2 (g+h x)\right)-$$
$$\left(2 d^2 q r \left(p r \operatorname{Log}[a+b x]+q r \operatorname{Log}[c+d x]-\operatorname{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)\right) \Big/$$
$$\left(3 h (d g-c h)^2 (g+h x)\right)-\frac{1}{3 h (b g-a h)^3} 2 b^3 p r \operatorname{Log}[a+b x]$$
$$\left(p r \operatorname{Log}[a+b x]+q r \operatorname{Log}[c+d x]-\operatorname{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)-\frac{1}{3 h (d g-c h)^3}$$
$$2 d^3 q r \operatorname{Log}[c+d x] \left(p r \operatorname{Log}[a+b x]+q r \operatorname{Log}[c+d x]-\operatorname{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)-$$

$$\frac{\text{Log}\left[e\left(f(a+bx)^p(c+dx)^q\right)^r\right]^2}{3h(g+hx)^3}+\frac{b^3p^2r^2\,\text{Log}[g+hx]}{h(bg-ah)^3}+\frac{b\,d^2pqr^2\,\text{Log}[g+hx]}{h(bg-ah)(dg-ch)^2}+$$

$$\frac{b^2dpqr^2\,\text{Log}[g+hx]}{h(bg-ah)^2(dg-ch)}+\frac{d^3q^2r^2\,\text{Log}[g+hx]}{h(dg-ch)^3}+\frac{1}{3h(bg-ah)^3}$$

$$2b^3pr\left(pr\,\text{Log}[a+bx]+qr\,\text{Log}[c+dx]-\text{Log}\left[e\left(f(a+bx)^p(c+dx)^q\right)^r\right]\right)\text{Log}[g+hx]+$$

$$\frac{1}{3h(dg-ch)^3}2d^3qr\left(pr\,\text{Log}[a+bx]+qr\,\text{Log}[c+dx]-\text{Log}\left[e\left(f(a+bx)^p(c+dx)^q\right)^r\right]\right)$$

$$\text{Log}[g+hx]-\frac{2b^3p^2r^2\,\text{Log}[a+bx]\,\text{Log}\left[\frac{b(g+hx)}{bg-ah}\right]}{3h(bg-ah)^3}-\frac{2d^3pqr^2\,\text{Log}[a+bx]\,\text{Log}\left[\frac{b(g+hx)}{bg-ah}\right]}{3h(dg-ch)^3}-$$

$$\frac{2b^3pqr^2\,\text{Log}[c+dx]\,\text{Log}\left[\frac{d(g+hx)}{dg-ch}\right]}{3h(bg-ah)^3}-\frac{2d^3q^2r^2\,\text{Log}[c+dx]\,\text{Log}\left[\frac{d(g+hx)}{dg-ch}\right]}{3h(dg-ch)^3}+$$

$$\frac{2d^3pqr^2\,\text{PolyLog}\left[2,-\frac{d(a+bx)}{bc-ad}\right]}{3h(dg-ch)^3}-\frac{2b^3p^2r^2\,\text{PolyLog}\left[2,-\frac{h(a+bx)}{bg-ah}\right]}{3h(bg-ah)^3}-$$

$$\frac{2d^3pqr^2\,\text{PolyLog}\left[2,-\frac{h(a+bx)}{bg-ah}\right]}{3h(dg-ch)^3}+\frac{2b^3pqr^2\,\text{PolyLog}\left[2,\frac{b(c+dx)}{bc-ad}\right]}{3h(bg-ah)^3}-$$

$$\frac{2b^3pqr^2\,\text{PolyLog}\left[2,-\frac{h(c+dx)}{dg-ch}\right]}{3h(bg-ah)^3}-\frac{2d^3q^2r^2\,\text{PolyLog}\left[2,-\frac{h(c+dx)}{dg-ch}\right]}{3h(dg-ch)^3}$$

Problem 43: Result optimal but 1 more steps used.

$$\int\frac{\left(a+b\,\text{Log}\left[\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right]\right)^n}{1-c^2x^2}\,dx$$

Optimal (type 3, 42 leaves, 2 steps):

$$-\frac{\left(a+b\,\text{Log}\left[\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right]\right)^{1+n}}{b\,c\,(1+n)}$$

Result (type 3, 42 leaves, 3 steps):

$$-\frac{\left(a+b\,\text{Log}\left[\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right]\right)^{1+n}}{b\,c\,(1+n)}$$

Problem 47: Result optimal but 1 more steps used.

$$\int\frac{1}{(1-c^2x^2)\left(a+b\,\text{Log}\left[\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right]\right)}\,dx$$

Optimal (type 3, 34 leaves, 2 steps):

$$-\frac{\text{Log}\left[a+b\,\text{Log}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]\right]}{b\,c}$$

Result (type 3, 34 leaves, 3 steps):

$$-\frac{\text{Log}\left[a+b\,\text{Log}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]\right]}{b\,c}$$

Problem 48: Result optimal but 1 more steps used.

$$\int \frac{1}{\left(1-c^2\,x^2\right)\,\left(a+b\,\text{Log}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]\right)^2}\,dx$$

Optimal (type 3, 34 leaves, 2 steps):

$$\frac{1}{b\,c\,\left(a+b\,\text{Log}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]\right)}$$

Result (type 3, 34 leaves, 3 steps):

$$\frac{1}{b\,c\,\left(a+b\,\text{Log}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]\right)}$$

Problem 49: Result optimal but 1 more steps used.

$$\int \frac{1}{\left(1-c^2\,x^2\right)\,\left(a+b\,\text{Log}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]\right)^3}\,dx$$

Optimal (type 3, 37 leaves, 2 steps):

$$\frac{1}{2\,b\,c\,\left(a+b\,\text{Log}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]\right)^2}$$

Result (type 3, 37 leaves, 3 steps):

$$\frac{1}{2\,b\,c\,\left(a+b\,\text{Log}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]\right)^2}$$

Problem 74: Unable to integrate problem.

$$\int \left(\frac{1}{(c+d\,x)\,\left(-a+c+(-b+d)\,x\right)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}+\frac{\text{Log}\left[1-\frac{a+b\,x}{c+d\,x}\right]}{(a+b\,x)\,(c+d\,x)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}\right)dx$$

Optimal (type 3, 45 leaves, ? steps):

$$-\frac{\text{Log}\left[1-\frac{a+b x}{c+d x}\right]}{(b c-a d) \text{Log}\left[\frac{a+b x}{c+d x}\right]}$$

Result (type 8, 152 leaves, 3 steps):

$$\frac{b\,\text{CannotIntegrate}\left[\frac{\text{Log}\left[1-\frac{a+b x}{c+d x}\right]}{(a+b x) \text{Log}\left[\frac{a+b x}{c+d x}\right]^2},x\right]}{b c-a d}-\frac{d\,\text{CannotIntegrate}\left[\frac{\text{Log}\left[1-\frac{a+b x}{c+d x}\right]}{(c+d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]^2},x\right]}{b c-a d}+\text{Unintegrable}\left[\frac{1}{(c+d x) (-a+c+(-b+d) x) \text{Log}\left[\frac{a+b x}{c+d x}\right]},x\right]$$

Problem 75: Unable to integrate problem.

$$\int \left(-\frac{1}{(a+b x) (a-c+(b-d) x) \text{Log}\left[\frac{a+b x}{c+d x}\right]}+\frac{\text{Log}\left[1-\frac{c+d x}{a+b x}\right]}{(a+b x) (c+d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]^2}\right) dx$$

Optimal (type 3, 45 leaves, ? steps):

$$-\frac{\text{Log}\left[1-\frac{c+d x}{a+b x}\right]}{(b c-a d) \text{Log}\left[\frac{a+b x}{c+d x}\right]}$$

Result (type 8, 154 leaves, 3 steps):

$$\frac{b\,\text{CannotIntegrate}\left[\frac{\text{Log}\left[1-\frac{c+d x}{a+b x}\right]}{(a+b x) \text{Log}\left[\frac{a+b x}{c+d x}\right]^2},x\right]}{b c-a d}-\frac{d\,\text{CannotIntegrate}\left[\frac{\text{Log}\left[1-\frac{c+d x}{a+b x}\right]}{(c+d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]^2},x\right]}{b c-a d}-\text{Unintegrable}\left[\frac{1}{(a+b x) (a-c+(b-d) x) \text{Log}\left[\frac{a+b x}{c+d x}\right]},x\right]$$

Problem 79: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{f-g x^2} dx$$

Optimal (type 4, 291 leaves, 7 steps):

$$\frac{\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}\left[1-\frac{\left(d \sqrt{f}-c \sqrt{g}\right) (a+b x)}{\left(b \sqrt{f}-a \sqrt{g}\right) (c+d x)}\right]}{2 \sqrt{f} \sqrt{g}}-\frac{\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}\left[1-\frac{\left(d \sqrt{f}+c \sqrt{g}\right) (a+b x)}{\left(b \sqrt{f}+a \sqrt{g}\right) (c+d x)}\right]}{2 \sqrt{f} \sqrt{g}}+\frac{n\,\text{PolyLog}\left[2,\frac{\left(d \sqrt{f}-c \sqrt{g}\right) (a+b x)}{\left(b \sqrt{f}-a \sqrt{g}\right) (c+d x)}\right]}{2 \sqrt{f} \sqrt{g}}-\frac{n\,\text{PolyLog}\left[2,\frac{\left(d \sqrt{f}+c \sqrt{g}\right) (a+b x)}{\left(b \sqrt{f}+a \sqrt{g}\right) (c+d x)}\right]}{2 \sqrt{f} \sqrt{g}}$$

Result (type 4, 468 leaves, 18 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\left(n\,\text{Log}[a+b\,x]-\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}[c+d\,x]\right)}{\sqrt{f}\,\sqrt{g}}-$$

$$\frac{n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\left(\sqrt{f}-\sqrt{g}\,x\right)}{b\sqrt{f}+a\sqrt{g}}\right]}{2\sqrt{f}\,\sqrt{g}}+\frac{n\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{d\left(\sqrt{f}-\sqrt{g}\,x\right)}{d\sqrt{f}+c\sqrt{g}}\right]}{2\sqrt{f}\,\sqrt{g}}+$$

$$\frac{n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\left(\sqrt{f}+\sqrt{g}\,x\right)}{b\sqrt{f}-a\sqrt{g}}\right]}{2\sqrt{f}\,\sqrt{g}}-\frac{n\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{d\left(\sqrt{f}+\sqrt{g}\,x\right)}{d\sqrt{f}-c\sqrt{g}}\right]}{2\sqrt{f}\,\sqrt{g}}+\frac{n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(a+b\,x)}{b\sqrt{f}-a\sqrt{g}}\right]}{2\sqrt{f}\,\sqrt{g}}-$$

$$\frac{n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(a+b\,x)}{b\sqrt{f}+a\sqrt{g}}\right]}{2\sqrt{f}\,\sqrt{g}}-\frac{n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(c+d\,x)}{d\sqrt{f}-c\sqrt{g}}\right]}{2\sqrt{f}\,\sqrt{g}}+\frac{n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(c+d\,x)}{d\sqrt{f}+c\sqrt{g}}\right]}{2\sqrt{f}\,\sqrt{g}}$$

Problem 85: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{f+g\,x+h\,x^2}\,dx$$

Optimal (type 4, 401 leaves, 7 steps):

$$-\frac{\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\text{Log}\left[1-\frac{2\left(d^2 f-c\,d\,g+c^2 h\right)(a+b\,x)}{\left(2\,b\,d\,f-b\,c\,g-a\,d\,g+2\,a\,c\,h-(b\,c-a\,d)\sqrt{g^2-4\,f\,h}\right)(c+d\,x)}\right]}{\sqrt{g^2-4\,f\,h}}+$$

$$\frac{\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\text{Log}\left[1-\frac{2\left(d^2 f-c\,d\,g+c^2 h\right)(a+b\,x)}{\left(2\,b\,d\,f-b\,c\,g-a\,d\,g+2\,a\,c\,h+(b\,c-a\,d)\sqrt{g^2-4\,f\,h}\right)(c+d\,x)}\right]}{\sqrt{g^2-4\,f\,h}}-$$

$$\frac{n\,\text{PolyLog}\left[2,\frac{2\left(d^2 f-c\,d\,g+c^2 h\right)(a+b\,x)}{\left(2\,b\,d\,f-b\,c\,g-a\,d\,g+2\,a\,c\,h-(b\,c-a\,d)\sqrt{g^2-4\,f\,h}\right)(c+d\,x)}\right]}{\sqrt{g^2-4\,f\,h}}+$$

$$\frac{n\,\text{PolyLog}\left[2,\frac{2\left(d^2 f-c\,d\,g+c^2 h\right)(a+b\,x)}{\left(2\,b\,d\,f-b\,c\,g-a\,d\,g+2\,a\,c\,h+(b\,c-a\,d)\sqrt{g^2-4\,f\,h}\right)(c+d\,x)}\right]}{\sqrt{g^2-4\,f\,h}}$$

Result (type 4, 545 leaves, 19 steps):

$$\frac{2\,\text{ArcTanh}\left[\frac{g+2\,h\,x}{\sqrt{g^2-4\,f\,h}}\right]\left(n\,\text{Log}[a+b\,x]-\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}[c+d\,x]\right)}{\sqrt{g^2-4\,f\,h}}+$$

$$\frac{n\,\text{Log}[a+b\,x]\,\text{Log}\left[-\frac{b\left(g-\sqrt{g^2-4\,f\,h}+2\,h\,x\right)}{2\,a\,h-b\left(g-\sqrt{g^2-4\,f\,h}\right)}\right]}{\sqrt{g^2-4\,f\,h}}-\frac{n\,\text{Log}[c+d\,x]\,\text{Log}\left[-\frac{d\left(g-\sqrt{g^2-4\,f\,h}+2\,h\,x\right)}{2\,c\,h-d\left(g-\sqrt{g^2-4\,f\,h}\right)}\right]}{\sqrt{g^2-4\,f\,h}}-$$

$$\frac{n\,\text{Log}[a+b\,x]\,\text{Log}\left[-\frac{b\left(g+\sqrt{g^2-4\,f\,h}+2\,h\,x\right)}{2\,a\,h-b\left(g+\sqrt{g^2-4\,f\,h}\right)}\right]}{\sqrt{g^2-4\,f\,h}}+\frac{n\,\text{Log}[c+d\,x]\,\text{Log}\left[-\frac{d\left(g+\sqrt{g^2-4\,f\,h}+2\,h\,x\right)}{2\,c\,h-d\left(g+\sqrt{g^2-4\,f\,h}\right)}\right]}{\sqrt{g^2-4\,f\,h}}+$$

$$\frac{n\,\text{PolyLog}\left[2,\frac{2\,h\,(a+b\,x)}{2\,a\,h-b\left(g-\sqrt{g^2-4\,f\,h}\right)}\right]}{\sqrt{g^2-4\,f\,h}}-\frac{n\,\text{PolyLog}\left[2,\frac{2\,h\,(a+b\,x)}{2\,a\,h-b\left(g+\sqrt{g^2-4\,f\,h}\right)}\right]}{\sqrt{g^2-4\,f\,h}}-$$

$$\frac{n\,\text{PolyLog}\left[2,\frac{2\,h\,(c+d\,x)}{2\,c\,h-d\left(g-\sqrt{g^2-4\,f\,h}\right)}\right]}{\sqrt{g^2-4\,f\,h}}+\frac{n\,\text{PolyLog}\left[2,\frac{2\,h\,(c+d\,x)}{2\,c\,h-d\left(g+\sqrt{g^2-4\,f\,h}\right)}\right]}{\sqrt{g^2-4\,f\,h}}$$

Problem 107: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]^2}{e+f\,x}\,dx$$

Optimal (type 4, 322 leaves, 9 steps):

$$-\frac{\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]^2}{f}+\frac{\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]^2\text{Log}\left[1-\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]}{f}-$$

$$\frac{2\,\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{f}+\frac{2\,\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\text{PolyLog}\left[2,\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]}{f}+$$

$$\frac{2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{f}-\frac{2\,\text{PolyLog}\left[3,\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]}{f}$$

Result (type 4, 334 leaves, 7 steps):

$$-\frac{\text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]^2}{f}+\frac{\text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]^2 \text{Log}\left[\frac{(b c-a d) (e+f x)}{(b e-a f) (c+d x)}\right]}{f}+$$
$$\frac{2 \text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right] \text{PolyLog}\left[2,1-\frac{b c-a d}{b (c+d x)}\right]}{f}-\frac{2 \text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right] \text{PolyLog}\left[2,1-\frac{(b c-a d) (e+f x)}{(b e-a f) (c+d x)}\right]}{f}+$$
$$\frac{2 \text{PolyLog}\left[3,1-\frac{b c-a d}{b (c+d x)}\right]}{f}-\frac{2 \text{PolyLog}\left[3,1-\frac{(b c-a d) (e+f x)}{(b e-a f) (c+d x)}\right]}{f}$$

Problem 108: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right] \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]}{(a+b x) (c+d x)} \, dx$$

Optimal (type 4, 433 leaves, 10 steps):

$$-\frac{\text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]^2}{2 (b c-a d)}-\frac{\text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]^2 \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]}{2 (b c-a d)}+$$
$$\frac{\text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]^2 \text{Log}\left[1-\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]}{2 (b c-a d)}-\frac{\text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b c-a d}+$$
$$\frac{\text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right] \text{PolyLog}\left[2,\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]}{b c-a d}+\frac{\text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b c-a d}-\frac{\text{PolyLog}\left[3,\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]}{b c-a d}$$

Result (type 4, 445 leaves, 8 steps):

$$-\frac{\text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]^2}{2 (b c-a d)}-\frac{\text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]^2 \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]}{2 (b c-a d)}+$$
$$\frac{\text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]^2 \text{Log}\left[\frac{(b c-a d) (e+f x)}{(b e-a f) (c+d x)}\right]}{2 (b c-a d)}+\frac{\text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right] \text{PolyLog}\left[2,1-\frac{b c-a d}{b (c+d x)}\right]}{b c-a d}-$$
$$\frac{\text{Log}\left[\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right] \text{PolyLog}\left[2,1-\frac{(b c-a d) (e+f x)}{(b e-a f) (c+d x)}\right]}{b c-a d}+$$
$$\frac{\text{PolyLog}\left[3,1-\frac{b c-a d}{b (c+d x)}\right]}{b c-a d}-\frac{\text{PolyLog}\left[3,1-\frac{(b c-a d) (e+f x)}{(b e-a f) (c+d x)}\right]}{b c-a d}$$

Test results for the 547 problems in "3.3 u (a+b log(c (d+e x)^n))^p.m"

Problem 44: Result valid but suboptimal antiderivative.

$$\int (f+g x)^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \, dx$$

Optimal (type 3, 365 leaves, 8 steps):

$$\frac{2 b^2 (e f-d g)^3 n^2 x}{e^3}+\frac{3 b^2 g (e f-d g)^2 n^2 (d+e x)^2}{4 e^4}+\frac{2 b^2 g^2 (e f-d g) n^2 (d+e x)^3}{9 e^4}+\frac{b^2 g^3 n^2 (d+e x)^4}{32 e^4}+\frac{b^2 (e f-d g)^4 n^2 \mathrm{Log}[d+e x]^2}{4 e^4 g}-\frac{2 b (e f-d g)^3 n (d+e x) \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{e^4}-\frac{3 b g (e f-d g)^2 n (d+e x)^2 \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{2 e^4}-\frac{2 b g^2 (e f-d g) n (d+e x)^3 \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{3 e^4}-\frac{b g^3 n (d+e x)^4 \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{8 e^4}-\frac{b (e f-d g)^4 n \mathrm{Log}[d+e x] \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{2 e^4 g}+\frac{(f+g x)^4 \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)^2}{4 g}$$

Result (type 3, 301 leaves, 6 steps):

$$\frac{2 b^2 (e f-d g)^3 n^2 x}{e^3}+\frac{3 b^2 g (e f-d g)^2 n^2 (d+e x)^2}{4 e^4}+\frac{2 b^2 g^2 (e f-d g) n^2 (d+e x)^3}{9 e^4}+\frac{b^2 g^3 n^2 (d+e x)^4}{32 e^4}+\frac{b^2 (e f-d g)^4 n^2 \mathrm{Log}[d+e x]^2}{4 e^4 g}-\frac{1}{24 g} b n \left(\frac{48 g (e f-d g)^3 (d+e x)}{e^4}+\frac{36 g^2 (e f-d g)^2 (d+e x)^2}{e^4}+\frac{16 g^3 (e f-d g) (d+e x)^3}{e^4}+\frac{3 g^4 (d+e x)^4}{e^4}+\frac{12 (e f-d g)^4 \mathrm{Log}[d+e x]}{e^4}\right) \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)+\frac{(f+g x)^4 \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)^2}{4 g}$$

Problem 45: Result valid but suboptimal antiderivative.

$$\int (f+g x)^2 \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)^2 dx$$

Optimal (type 3, 287 leaves, 8 steps):

$$\frac{2 b^2 (e f-d g)^2 n^2 x}{e^2}+\frac{b^2 g (e f-d g) n^2 (d+e x)^2}{2 e^3}+\frac{2 b^2 g^2 n^2 (d+e x)^3}{27 e^3}+\frac{b^2 (e f-d g)^3 n^2 \mathrm{Log}[d+e x]^2}{3 e^3 g}-\frac{2 b (e f-d g)^2 n (d+e x) \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{e^3}-\frac{b g (e f-d g) n (d+e x)^2 \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{e^3}-\frac{2 b g^2 n (d+e x)^3 \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{9 e^3}-\frac{2 b (e f-d g)^3 n \mathrm{Log}[d+e x] \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{3 e^3 g}+\frac{(f+g x)^3 \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)^2}{3 g}$$

Result (type 3, 243 leaves, 8 steps):

$$\frac{2 b^2 (e f-d g)^2 n^2 x}{e^2}+\frac{b^2 g (e f-d g) n^2 (d+e x)^2}{2 e^3}+\frac{2 b^2 g^2 n^2 (d+e x)^3}{27 e^3}+\frac{b^2 (e f-d g)^3 n^2 \text{Log}[d+e x]^2}{3 e^3 g}-\frac{1}{9 g}b n \left(\frac{18 g (e f-d g)^2 (d+e x)}{e^3}+\frac{9 g^2 (e f-d g) (d+e x)^2}{e^3}+\frac{2 g^3 (d+e x)^3}{e^3}+\frac{6 (e f-d g)^3 \text{Log}[d+e x]}{e^3}\right) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)+\frac{(f+g x)^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{3 g}$$

Problem 50: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{(f+g x)^3} \, dx$$

Optimal (type 4, 202 leaves, 7 steps):

$$-\frac{b e n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{(e f-d g)^2 (f+g x)}-\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 g (f+g x)^2}+\frac{b^2 e^2 n^2 \text{Log}[f+g x]}{g (e f-d g)^2}-\frac{b e^2 n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[1+\frac{e f-d g}{g (d+e x)}\right]}{g (e f-d g)^2}+\frac{b^2 e^2 n^2 \text{PolyLog}\left[2,-\frac{e f-d g}{g (d+e x)}\right]}{g (e f-d g)^2}$$

Result (type 4, 233 leaves, 9 steps):

$$-\frac{b e n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{(e f-d g)^2 (f+g x)}+\frac{e^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 g (e f-d g)^2}-\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 g (f+g x)^2}+\frac{b^2 e^2 n^2 \text{Log}[f+g x]}{g (e f-d g)^2}-\frac{b e^2 n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]}{g (e f-d g)^2}-\frac{b^2 e^2 n^2 \text{PolyLog}\left[2,-\frac{g (d+e x)}{e f-d g}\right]}{g (e f-d g)^2}$$

Problem 51: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{(f+g x)^4} \, dx$$

Optimal (type 4, 317 leaves, 11 steps):

$$-\frac{b^2 e^2 n^2}{3 g (e f-d g)^2 (f+g x)}-\frac{b^2 e^3 n^2 \operatorname{Log}[d+e x]}{3 g (e f-d g)^3}+\frac{b e n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{3 g (e f-d g) (f+g x)^2}-\frac{2 b e^2 n (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{3 (e f-d g)^3 (f+g x)}-\frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{3 g (f+g x)^3}+\frac{b^2 e^3 n^2 \operatorname{Log}[f+g x]}{g (e f-d g)^3}-\frac{2 b e^3 n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[1+\frac{e f-d g}{g (d+e x)}\right]}{3 g (e f-d g)^3}+\frac{2 b^2 e^3 n^2 \operatorname{PolyLog}\left[2,-\frac{e f-d g}{g (d+e x)}\right]}{3 g (e f-d g)^3}$$

Result (type 4, 347 leaves, 13 steps):

$$-\frac{b^2 e^2 n^2}{3 g (e f-d g)^2 (f+g x)}-\frac{b^2 e^3 n^2 \operatorname{Log}[d+e x]}{3 g (e f-d g)^3}+\frac{b e n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{3 g (e f-d g) (f+g x)^2}-\frac{2 b e^2 n (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{3 (e f-d g)^3 (f+g x)}+\frac{e^3 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{3 g (e f-d g)^3}-\frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{3 g (f+g x)^3}+\frac{b^2 e^3 n^2 \operatorname{Log}[f+g x]}{g (e f-d g)^3}-\frac{2 b e^3 n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]}{3 g (e f-d g)^3}-\frac{2 b^2 e^3 n^2 \operatorname{PolyLog}\left[2,-\frac{g (d+e x)}{e f-d g}\right]}{3 g (e f-d g)^3}$$

Problem 58: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3}{(f+g x)^3} \, dx$$

Optimal (type 4, 342 leaves, 9 steps):

$$-\frac{3 b e n (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{2 (e f-d g)^2 (f+g x)}-\frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3}{2 g (f+g x)^2}+\frac{3 b^2 e^2 n^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]}{g (e f-d g)^2}-\frac{3 b e^2 n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[1+\frac{e f-d g}{g (d+e x)}\right]}{2 g (e f-d g)^2}+\frac{3 b^2 e^2 n^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{e f-d g}{g (d+e x)}\right]}{g (e f-d g)^2}+\frac{3 b^3 e^2 n^3 \operatorname{PolyLog}\left[2,-\frac{g (d+e x)}{e f-d g}\right]}{g (e f-d g)^2}+\frac{3 b^3 e^2 n^3 \operatorname{PolyLog}\left[3,-\frac{e f-d g}{g (d+e x)}\right]}{g (e f-d g)^2}$$

Result (type 4, 370 leaves, 12 steps):

$$-\frac{3\,b\,e\,n\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2\,(e\,f-d\,g)^2\,(f+g\,x)}+\frac{e^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3}{2\,g\,(e\,f-d\,g)^2}-\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3}{2\,g\,(f+g\,x)^2}+\frac{3\,b^2\,e^2\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]}{g\,(e\,f-d\,g)^2}-\frac{3\,b\,e^2\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]}{2\,g\,(e\,f-d\,g)^2}+\frac{3\,b^3\,e^2\,n^3\,\text{PolyLog}\left[2,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g\,(e\,f-d\,g)^2}-\frac{3\,b^2\,e^2\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g\,(e\,f-d\,g)^2}+\frac{3\,b^3\,e^2\,n^3\,\text{PolyLog}\left[3,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g\,(e\,f-d\,g)^2}$$

Problem 59: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3}{(f+g\,x)^4}\,dx$$

Optimal (type 4, 564 leaves, 16 steps):

$$\frac{b^2\,e^2\,n^2\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{(e\,f-d\,g)^3\,(f+g\,x)}+\frac{b\,e\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2\,g\,(e\,f-d\,g)\,(f+g\,x)^2}-\frac{b\,e^2\,n\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{(e\,f-d\,g)^3\,(f+g\,x)}-\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3}{3\,g\,(f+g\,x)^3}-\frac{b^3\,e^3\,n^3\,\text{Log}[f+g\,x]}{g\,(e\,f-d\,g)^3}+\frac{2\,b^2\,e^3\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]}{g\,(e\,f-d\,g)^3}+\frac{b^2\,e^3\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[1+\frac{e\,f-d\,g}{g\,(d+e\,x)}\right]}{g\,(e\,f-d\,g)^3}-\frac{b\,e^3\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[1+\frac{e\,f-d\,g}{g\,(d+e\,x)}\right]}{g\,(e\,f-d\,g)^3}-\frac{b^3\,e^3\,n^3\,\text{PolyLog}\left[2,-\frac{e\,f-d\,g}{g\,(d+e\,x)}\right]}{g\,(e\,f-d\,g)^3}+\frac{2\,b^2\,e^3\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{e\,f-d\,g}{g\,(d+e\,x)}\right]}{g\,(e\,f-d\,g)^3}+\frac{2\,b^3\,e^3\,n^3\,\text{PolyLog}\left[2,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g\,(e\,f-d\,g)^3}+\frac{2\,b^3\,e^3\,n^3\,\text{PolyLog}\left[3,-\frac{e\,f-d\,g}{g\,(d+e\,x)}\right]}{g\,(e\,f-d\,g)^3}$$

Result (type 4, 525 leaves, 21 steps):

$$\frac{b^2 e^2 n^2 (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{(e f-d g)^3 (f+g x)}-\frac{b e^3 n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 g (e f-d g)^3}+$$
$$\frac{b e n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 g (e f-d g) (f+g x)^2}-\frac{b e^2 n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{(e f-d g)^3 (f+g x)}+$$
$$\frac{e^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{3 g (e f-d g)^3}-\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{3 g (f+g x)^3}-$$
$$\frac{b^3 e^3 n^3 \text{Log}[f+g x]}{g (e f-d g)^3}+\frac{3 b^2 e^3 n^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]}{g (e f-d g)^3}-$$
$$\frac{b e^3 n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]}{g (e f-d g)^3}+\frac{3 b^3 e^3 n^3 \text{PolyLog}\left[2,-\frac{g (d+e x)}{e f-d g}\right]}{g (e f-d g)^3}-$$
$$\frac{2 b^2 e^3 n^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,-\frac{g (d+e x)}{e f-d g}\right]}{g (e f-d g)^3}+\frac{2 b^3 e^3 n^3 \text{PolyLog}\left[3,-\frac{g (d+e x)}{e f-d g}\right]}{g (e f-d g)^3}$$

Problem 85: Result valid but suboptimal antiderivative.

$$\int x^2 \text{Log}\left[c (a+b x)^n\right]^2 \, dx$$

Optimal (type 3, 187 leaves, 7 steps):

$$\frac{2 a^2 n^2 x}{b^2}-\frac{a n^2 (a+b x)^2}{2 b^3}+\frac{2 n^2 (a+b x)^3}{27 b^3}-\frac{a^3 n^2 \text{Log}[a+b x]^2}{3 b^3}-$$
$$\frac{2 a^2 n (a+b x) \text{Log}\left[c (a+b x)^n\right]}{b^3}+\frac{a n (a+b x)^2 \text{Log}\left[c (a+b x)^n\right]}{b^3}-$$
$$\frac{2 n (a+b x)^3 \text{Log}\left[c (a+b x)^n\right]}{9 b^3}+\frac{2 a^3 n \text{Log}[a+b x] \text{Log}\left[c (a+b x)^n\right]}{3 b^3}+\frac{1}{3} x^3 \text{Log}\left[c (a+b x)^n\right]^2$$

Result (type 3, 156 leaves, 7 steps):

$$\frac{2 a^2 n^2 x}{b^2}-\frac{a n^2 (a+b x)^2}{2 b^3}+\frac{2 n^2 (a+b x)^3}{27 b^3}-\frac{a^3 n^2 \text{Log}[a+b x]^2}{3 b^3}-$$
$$\frac{1}{9} n \left(\frac{18 a^2 (a+b x)}{b^3}-\frac{9 a (a+b x)^2}{b^3}+\frac{2 (a+b x)^3}{b^3}-\frac{6 a^3 \text{Log}[a+b x]}{b^3}\right) \text{Log}\left[c (a+b x)^n\right]+$$
$$\frac{1}{3} x^3 \text{Log}\left[c (a+b x)^n\right]^2$$

Problem 86: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Log}\left[c (a+b x)^n\right]^2}{x^4} \, dx$$

Optimal (type 4, 177 leaves, 11 steps):

$$-\frac{b^2 n^2}{3 a^2 x}-\frac{b^3 n^2 \operatorname{Log}[x]}{a^3}+\frac{b^3 n^2 \operatorname{Log}[a+b x]}{3 a^3}-\frac{b n \operatorname{Log}\left[c (a+b x)^n\right]}{3 a x^2}+\frac{2 b^2 n (a+b x) \operatorname{Log}\left[c (a+b x)^n\right]}{3 a^3 x}-\frac{\operatorname{Log}\left[c (a+b x)^n\right]^2}{3 x^3}+\frac{2 b^3 n \operatorname{Log}\left[c (a+b x)^n\right] \operatorname{Log}\left[1-\frac{a}{a+b x}\right]}{3 a^3}-\frac{2 b^3 n^2 \operatorname{PolyLog}\left[2, \frac{a}{a+b x}\right]}{3 a^3}$$

Result (type 4, 193 leaves, 13 steps):

$$-\frac{b^2 n^2}{3 a^2 x}-\frac{b^3 n^2 \operatorname{Log}[x]}{a^3}+\frac{b^3 n^2 \operatorname{Log}[a+b x]}{3 a^3}-\frac{b n \operatorname{Log}\left[c (a+b x)^n\right]}{3 a x^2}+\frac{2 b^2 n (a+b x) \operatorname{Log}\left[c (a+b x)^n\right]}{3 a^3 x}+\frac{2 b^3 n \operatorname{Log}\left[-\frac{b x}{a}\right] \operatorname{Log}\left[c (a+b x)^n\right]}{3 a^3}-\frac{b^3 \operatorname{Log}\left[c (a+b x)^n\right]^2}{3 a^3}-\frac{\operatorname{Log}\left[c (a+b x)^n\right]^2}{3 x^3}+\frac{2 b^3 n^2 \operatorname{PolyLog}\left[2, 1+\frac{b x}{a}\right]}{3 a^3}$$

Problem 175: Result valid but suboptimal antiderivative.

$$\int \frac{(h+i x)^4 (a+b \operatorname{Log}[c (e+f x)])}{d e+d f x} \, dx$$

Optimal (type 3, 315 leaves, 8 steps):

$$-\frac{4 b i (f h-e i)^3 x}{d f^4}-\frac{3 b i^2 (f h-e i)^2 (e+f x)^2}{2 d f^5}-\frac{4 b i^3 (f h-e i) (e+f x)^3}{9 d f^5}-\frac{b i^4 (e+f x)^4}{16 d f^5}-\frac{b (f h-e i)^4 \operatorname{Log}[e+f x]^2}{2 d f^5}+\frac{4 i (f h-e i)^3 (e+f x) (a+b \operatorname{Log}[c (e+f x)])}{d f^5}+\frac{3 i^2 (f h-e i)^2 (e+f x)^2 (a+b \operatorname{Log}[c (e+f x)])}{d f^5}+\frac{4 i^3 (f h-e i) (e+f x)^3 (a+b \operatorname{Log}[c (e+f x)])}{3 d f^5}+\frac{i^4 (e+f x)^4 (a+b \operatorname{Log}[c (e+f x)])}{4 d f^5}+\frac{(f h-e i)^4 \operatorname{Log}[e+f x] (a+b \operatorname{Log}[c (e+f x)])}{d f^5}$$

Result (type 3, 260 leaves, 6 steps):

$$-\frac{4 b i (f h-e i)^3 x}{d f^4}-\frac{3 b i^2 (f h-e i)^2 (e+f x)^2}{2 d f^5}-\frac{4 b i^3 (f h-e i) (e+f x)^3}{9 d f^5}-\frac{b i^4 (e+f x)^4}{16 d f^5}-\frac{b (f h-e i)^4 \operatorname{Log}[e+f x]^2}{2 d f^5}+\frac{1}{12 d f}\left(\frac{48 i (f h-e i)^3 (e+f x)}{f^4}+\frac{36 i^2 (f h-e i)^2 (e+f x)^2}{f^4}+\frac{16 i^3 (f h-e i) (e+f x)^3}{f^4}+\frac{3 i^4 (e+f x)^4}{f^4}+\frac{12 (f h-e i)^4 \operatorname{Log}[e+f x]}{f^4}\right) (a+b \operatorname{Log}[c (e+f x)])$$

Problem 176: Result valid but suboptimal antiderivative.

$$\int \frac{(h+i x)^3 \left(a+b \operatorname{Log}\left[c (e+f x)\right]\right)}{d e+d f x} \, dx$$

Optimal (type 3, 244 leaves, 8 steps):

$$-\frac{3 b i (f h-e i)^2 x}{d f^3}-\frac{3 b i^2 (f h-e i) (e+f x)^2}{4 d f^4}-\frac{b i^3 (e+f x)^3}{9 d f^4}-\frac{b (f h-e i)^3 \operatorname{Log}[e+f x]^2}{2 d f^4}+\frac{3 i (f h-e i)^2 (e+f x) \left(a+b \operatorname{Log}\left[c (e+f x)\right]\right)}{d f^4}+\frac{3 i^2 (f h-e i) (e+f x)^2 \left(a+b \operatorname{Log}\left[c (e+f x)\right]\right)}{2 d f^4}+\frac{i^3 (e+f x)^3 \left(a+b \operatorname{Log}\left[c (e+f x)\right]\right)}{3 d f^4}+\frac{(f h-e i)^3 \operatorname{Log}[e+f x] \left(a+b \operatorname{Log}\left[c (e+f x)\right]\right)}{d f^4}$$

Result (type 3, 204 leaves, 8 steps):

$$-\frac{3 b i (f h-e i)^2 x}{d f^3}-\frac{3 b i^2 (f h-e i) (e+f x)^2}{4 d f^4}-\frac{b i^3 (e+f x)^3}{9 d f^4}-\frac{b (f h-e i)^3 \operatorname{Log}[e+f x]^2}{2 d f^4}+\frac{1}{6 d f}\left(\frac{18 i (f h-e i)^2 (e+f x)}{f^3}+\frac{9 i^2 (f h-e i) (e+f x)^2}{f^3}+\frac{2 i^3 (e+f x)^3}{f^3}+\frac{6 (f h-e i)^3 \operatorname{Log}[e+f x]}{f^3}\right) \left(a+b \operatorname{Log}\left[c (e+f x)\right]\right)$$

Problem 177: Result valid but suboptimal antiderivative.

$$\int \frac{(h+i x)^2 \left(a+b \operatorname{Log}\left[c (e+f x)\right]\right)}{d e+d f x} \, dx$$

Optimal (type 3, 157 leaves, 7 steps):

$$-\frac{b (4 f h-3 e i+f i x)^2}{4 d f^3}-\frac{b (f h-e i)^2 \operatorname{Log}[e+f x]^2}{2 d f^3}+\frac{2 i (f h-e i) (e+f x) \left(a+b \operatorname{Log}\left[c (e+f x)\right]\right)}{d f^3}+\frac{i^2 (e+f x)^2 \left(a+b \operatorname{Log}\left[c (e+f x)\right]\right)}{2 d f^3}+\frac{(f h-e i)^2 \operatorname{Log}[e+f x] \left(a+b \operatorname{Log}\left[c (e+f x)\right]\right)}{d f^3}$$

Result (type 3, 133 leaves, 7 steps):

$$-\frac{b (4 f h-3 e i+f i x)^2}{4 d f^3}-\frac{b (f h-e i)^2 \operatorname{Log}[e+f x]^2}{2 d f^3}+\frac{1}{2 d f}\left(\frac{4 i (f h-e i) (e+f x)}{f^2}+\frac{i^2 (e+f x)^2}{f^2}+\frac{2 (f h-e i)^2 \operatorname{Log}[e+f x]}{f^2}\right) \left(a+b \operatorname{Log}\left[c (e+f x)\right]\right)$$

Problem 180: Result valid but suboptimal antiderivative.

$$\int \frac{a+b \operatorname{Log}[c (e+f x)]}{(d e+d f x) (h+i x)} \, dx$$

Optimal (type 4, 87 leaves, 4 steps):

$$-\frac{(a+b \operatorname{Log}[c (e+f x)]) \operatorname{Log}\left[1+\frac{f h-e i}{i (e+f x)}\right]}{d (f h-e i)}+\frac{b \operatorname{PolyLog}\left[2,-\frac{f h-e i}{i (e+f x)}\right]}{d (f h-e i)}$$

Result (type 4, 116 leaves, 6 steps):

$$\frac{(a+b \operatorname{Log}[c (e+f x)])^2}{2 b d (f h-e i)}-\frac{(a+b \operatorname{Log}[c (e+f x)]) \operatorname{Log}\left[\frac{f (h+i x)}{f h-e i}\right]}{d (f h-e i)}-\frac{b \operatorname{PolyLog}\left[2,-\frac{i (e+f x)}{f h-e i}\right]}{d (f h-e i)}$$

Problem 181: Result valid but suboptimal antiderivative.

$$\int \frac{a+b \operatorname{Log}[c (e+f x)]}{(d e+d f x) (h+i x)^2} \, dx$$

Optimal (type 4, 151 leaves, 7 steps):

$$-\frac{i (e+f x) (a+b \operatorname{Log}[c (e+f x)])}{d (f h-e i)^2 (h+i x)}+\frac{b f \operatorname{Log}[h+i x]}{d (f h-e i)^2}-\frac{f (a+b \operatorname{Log}[c (e+f x)]) \operatorname{Log}\left[1+\frac{f h-e i}{i (e+f x)}\right]}{d (f h-e i)^2}+\frac{b f \operatorname{PolyLog}\left[2,-\frac{f h-e i}{i (e+f x)}\right]}{d (f h-e i)^2}$$

Result (type 4, 181 leaves, 9 steps):

$$-\frac{i (e+f x) (a+b \operatorname{Log}[c (e+f x)])}{d (f h-e i)^2 (h+i x)}+\frac{f (a+b \operatorname{Log}[c (e+f x)])^2}{2 b d (f h-e i)^2}+\frac{b f \operatorname{Log}[h+i x]}{d (f h-e i)^2}-\frac{f (a+b \operatorname{Log}[c (e+f x)]) \operatorname{Log}\left[\frac{f (h+i x)}{f h-e i}\right]}{d (f h-e i)^2}-\frac{b f \operatorname{PolyLog}\left[2,-\frac{i (e+f x)}{f h-e i}\right]}{d (f h-e i)^2}$$

Problem 182: Result valid but suboptimal antiderivative.

$$\int \frac{a+b \operatorname{Log}[c (e+f x)]}{(d e+d f x) (h+i x)^3} \, dx$$

Optimal (type 4, 250 leaves, 11 steps):

$$-\frac{b f}{2 d (f h-e i)^2 (h+i x)}-\frac{b f^2 \text{Log}[e+f x]}{2 d (f h-e i)^3}+\frac{a+b \text{Log}[c (e+f x)]}{2 d (f h-e i) (h+i x)^2}-\frac{f i (e+f x) (a+b \text{Log}[c (e+f x)])}{d (f h-e i)^3 (h+i x)}+\frac{3 b f^2 \text{Log}[h+i x]}{2 d (f h-e i)^3}-\frac{f^2 (a+b \text{Log}[c (e+f x)]) \text{Log}\left[1+\frac{f h-e i}{i (e+f x)}\right]}{d (f h-e i)^3}+\frac{b f^2 \text{PolyLog}\left[2,-\frac{f h-e i}{i (e+f x)}\right]}{d (f h-e i)^3}$$

Result (type 4, 282 leaves, 13 steps):

$$-\frac{b f}{2 d (f h-e i)^2 (h+i x)}-\frac{b f^2 \text{Log}[e+f x]}{2 d (f h-e i)^3}+\frac{a+b \text{Log}[c (e+f x)]}{2 d (f h-e i) (h+i x)^2}-\frac{f i (e+f x) (a+b \text{Log}[c (e+f x)])}{d (f h-e i)^3 (h+i x)}+\frac{f^2 (a+b \text{Log}[c (e+f x)])^2}{2 b d (f h-e i)^3}+\frac{3 b f^2 \text{Log}[h+i x]}{2 d (f h-e i)^3}-\frac{f^2 (a+b \text{Log}[c (e+f x)]) \text{Log}\left[\frac{f (h+i x)}{f h-e i}\right]}{d (f h-e i)^3}-\frac{b f^2 \text{PolyLog}\left[2,-\frac{i (e+f x)}{f h-e i}\right]}{d (f h-e i)^3}$$

Problem 183: Result valid but suboptimal antiderivative.

$$\int \frac{(h+i x)^4 (a+b \text{Log}[c (e+f x)])^2}{d e+d f x} \, dx$$

Optimal (type 3, 579 leaves, 32 steps):

$$-\frac{4 a b i (f h-e i)^3 x}{d f^4}+\frac{8 b^2 i (f h-e i)^3 x}{d f^4}+\frac{3 b^2 i^2 (f h-e i)^2 (e+f x)^2}{2 d f^5}+\frac{8 b^2 i^3 (f h-e i) (e+f x)^3}{27 d f^5}+\frac{b^2 i^4 (e+f x)^4}{32 d f^5}+\frac{7 b^2 (f h-e i)^4 \text{Log}[e+f x]^2}{12 d f^5}-\frac{4 b^2 i (f h-e i)^3 (e+f x) \text{Log}[c (e+f x)]}{d f^5}-\frac{4 b i (f h-e i)^3 (e+f x) (a+b \text{Log}[c (e+f x)])}{d f^5}-\frac{3 b i^2 (f h-e i)^2 (e+f x)^2 (a+b \text{Log}[c (e+f x)])}{d f^5}-\frac{8 b i^3 (f h-e i) (e+f x)^3 (a+b \text{Log}[c (e+f x)])}{9 d f^5}-\frac{b i^4 (e+f x)^4 (a+b \text{Log}[c (e+f x)])}{8 d f^5}-\frac{7 b (f h-e i)^4 \text{Log}[e+f x] (a+b \text{Log}[c (e+f x)])}{6 d f^5}+\frac{2 i (f h-e i)^3 (e+f x) (a+b \text{Log}[c (e+f x)])^2}{d f^5}+\frac{i^2 (f h-e i)^2 (e+f x)^2 (a+b \text{Log}[c (e+f x)])^2}{2 d f^5}+\frac{(f h-e i) (h+i x)^3 (a+b \text{Log}[c (e+f x)])^2}{3 d f^2}+\frac{(h+i x)^4 (a+b \text{Log}[c (e+f x)])^2}{4 d f}+\frac{(f h-e i)^4 (a+b \text{Log}[c (e+f x)])^3}{3 b d f^5}$$

Result (type 3, 672 leaves, 30 steps):

$$-\frac{4\,a\,b\,i\,(f\,h-e\,i)^3\,x}{d\,f^4}+\frac{8\,b^2\,i\,(f\,h-e\,i)^3\,x}{d\,f^4}+\frac{3\,b^2\,i^2\,(f\,h-e\,i)^2\,(e+f\,x)^2}{2\,d\,f^5}+\frac{8\,b^2\,i^3\,(f\,h-e\,i)\,(e+f\,x)^3}{27\,d\,f^5}+\frac{b^2\,i^4\,(e+f\,x)^4}{32\,d\,f^5}+\frac{7\,b^2\,(f\,h-e\,i)^4\,\text{Log}[e+f\,x]^2}{12\,d\,f^5}-\frac{4\,b^2\,i\,(f\,h-e\,i)^3\,(e+f\,x)\,\text{Log}[c\,(e+f\,x)]}{d\,f^5}-\frac{b\,i^2\,(f\,h-e\,i)^2\,(e+f\,x)^2\,(a+b\,\text{Log}[c\,(e+f\,x)])}{2\,d\,f^5}-\frac{1}{9\,d\,f^3}b\,(f\,h-e\,i)\left(\frac{18\,i\,(f\,h-e\,i)^2\,(e+f\,x)}{f^2}+\frac{9\,i^2\,(f\,h-e\,i)\,(e+f\,x)^2}{f^2}+\frac{2\,i^3\,(e+f\,x)^3}{f^2}+\frac{6\,(f\,h-e\,i)^3\,\text{Log}[e+f\,x]}{f^2}\right)(a+b\,\text{Log}[c\,(e+f\,x)])-\frac{1}{24\,d\,f^2}b\left(\frac{48\,i\,(f\,h-e\,i)^3\,(e+f\,x)}{f^3}+\frac{36\,i^2\,(f\,h-e\,i)^2\,(e+f\,x)^2}{f^3}+\frac{16\,i^3\,(f\,h-e\,i)\,(e+f\,x)^3}{f^3}+\frac{3\,i^4\,(e+f\,x)^4}{f^3}+\frac{12\,(f\,h-e\,i)^4\,\text{Log}[e+f\,x]}{f^3}\right)(a+b\,\text{Log}[c\,(e+f\,x)])+\frac{2\,i\,(f\,h-e\,i)^3\,(e+f\,x)\,(a+b\,\text{Log}[c\,(e+f\,x)])^2}{d\,f^5}+\frac{i^2\,(f\,h-e\,i)^2\,(e+f\,x)^2\,(a+b\,\text{Log}[c\,(e+f\,x)])^2}{2\,d\,f^5}+\frac{(f\,h-e\,i)\,(h+i\,x)^3\,(a+b\,\text{Log}[c\,(e+f\,x)])^2}{3\,d\,f^2}+\frac{(h+i\,x)^4\,(a+b\,\text{Log}[c\,(e+f\,x)])^2}{4\,d\,f}+\frac{(f\,h-e\,i)^4\,(a+b\,\text{Log}[c\,(e+f\,x)])^3}{3\,b\,d\,f^5}$$

Problem 188: Result valid but suboptimal antiderivative.

$$\int\frac{(a+b\,\text{Log}[c\,(e+f\,x)])^2}{(d\,e+d\,f\,x)\,(h+i\,x)}\,dx$$

Optimal (type 4, 142 leaves, 5 steps):

$$-\frac{(a+b\,\text{Log}[c\,(e+f\,x)])^2\,\text{Log}\left[1+\frac{f\,h-e\,i}{i\,(e+f\,x)}\right]}{d\,(f\,h-e\,i)}+\frac{2\,b\,(a+b\,\text{Log}[c\,(e+f\,x)])\,\text{PolyLog}\left[2,-\frac{f\,h-e\,i}{i\,(e+f\,x)}\right]}{d\,(f\,h-e\,i)}+\frac{2\,b^2\,\text{PolyLog}\left[3,-\frac{f\,h-e\,i}{i\,(e+f\,x)}\right]}{d\,(f\,h-e\,i)}$$

Result (type 4, 168 leaves, 8 steps):

$$\frac{(a+b\,\text{Log}[c\,(e+f\,x)])^3}{3\,b\,d\,(f\,h-e\,i)}-\frac{(a+b\,\text{Log}[c\,(e+f\,x)])^2\,\text{Log}\left[\frac{f\,(h+i\,x)}{f\,h-e\,i}\right]}{d\,(f\,h-e\,i)}-\frac{2\,b\,(a+b\,\text{Log}[c\,(e+f\,x)])\,\text{PolyLog}\left[2,-\frac{i\,(e+f\,x)}{f\,h-e\,i}\right]}{d\,(f\,h-e\,i)}+\frac{2\,b^2\,\text{PolyLog}\left[3,-\frac{i\,(e+f\,x)}{f\,h-e\,i}\right]}{d\,(f\,h-e\,i)}$$

Problem 189: Result valid but suboptimal antiderivative.

$$\int \frac{(a+b\,\text{Log}[c\,(e+f\,x)])^2}{(d\,e+d\,f\,x)\,(h+i\,x)^2}\,dx$$

Optimal (type 4, 273 leaves, 9 steps):

$$-\frac{i\,(e+f\,x)\,(a+b\,\text{Log}[c\,(e+f\,x)])^2}{d\,(f\,h-e\,i)^2\,(h+i\,x)}+\frac{2\,b\,f\,(a+b\,\text{Log}[c\,(e+f\,x)])\,\text{Log}\left[\frac{f\,(h+i\,x)}{f\,h-e\,i}\right]}{d\,(f\,h-e\,i)^2}-\frac{f\,(a+b\,\text{Log}[c\,(e+f\,x)])^2\,\text{Log}\left[1+\frac{f\,h-e\,i}{i\,(e+f\,x)}\right]}{d\,(f\,h-e\,i)^2}+\frac{2\,b\,f\,(a+b\,\text{Log}[c\,(e+f\,x)])\,\text{PolyLog}\left[2,-\frac{f\,h-e\,i}{i\,(e+f\,x)}\right]}{d\,(f\,h-e\,i)^2}+\frac{2\,b^2\,f\,\text{PolyLog}\left[2,-\frac{i\,(e+f\,x)}{f\,h-e\,i}\right]}{d\,(f\,h-e\,i)^2}+\frac{2\,b^2\,f\,\text{PolyLog}\left[3,-\frac{f\,h-e\,i}{i\,(e+f\,x)}\right]}{d\,(f\,h-e\,i)^2}$$

Result (type 4, 300 leaves, 12 steps):

$$-\frac{i\,(e+f\,x)\,(a+b\,\text{Log}[c\,(e+f\,x)])^2}{d\,(f\,h-e\,i)^2\,(h+i\,x)}+\frac{f\,(a+b\,\text{Log}[c\,(e+f\,x)])^3}{3\,b\,d\,(f\,h-e\,i)^2}+\frac{2\,b\,f\,(a+b\,\text{Log}[c\,(e+f\,x)])\,\text{Log}\left[\frac{f\,(h+i\,x)}{f\,h-e\,i}\right]}{d\,(f\,h-e\,i)^2}-\frac{f\,(a+b\,\text{Log}[c\,(e+f\,x)])^2\,\text{Log}\left[\frac{f\,(h+i\,x)}{f\,h-e\,i}\right]}{d\,(f\,h-e\,i)^2}+\frac{2\,b^2\,f\,\text{PolyLog}\left[2,-\frac{i\,(e+f\,x)}{f\,h-e\,i}\right]}{d\,(f\,h-e\,i)^2}-\frac{2\,b\,f\,(a+b\,\text{Log}[c\,(e+f\,x)])\,\text{PolyLog}\left[2,-\frac{i\,(e+f\,x)}{f\,h-e\,i}\right]}{d\,(f\,h-e\,i)^2}+\frac{2\,b^2\,f\,\text{PolyLog}\left[3,-\frac{i\,(e+f\,x)}{f\,h-e\,i}\right]}{d\,(f\,h-e\,i)^2}$$

Problem 190: Result valid but suboptimal antiderivative.

$$\int \frac{(a+b\,\text{Log}[c\,(e+f\,x)])^2}{(d\,e+d\,f\,x)\,(h+i\,x)^3}\,dx$$

Optimal (type 4, 485 leaves, 16 steps):

$$\frac{b f i (e+f x) (a+b \text{Log}[c (e+f x)])}{d (f h-e i)^3 (h+i x)}+\frac{(a+b \text{Log}[c (e+f x)])^2}{2 d (f h-e i) (h+i x)^2}-$$
$$\frac{f i (e+f x) (a+b \text{Log}[c (e+f x)])^2}{d (f h-e i)^3 (h+i x)}-\frac{b^2 f^2 \text{Log}[h+i x]}{d (f h-e i)^3}+$$
$$\frac{2 b f^2 (a+b \text{Log}[c (e+f x)]) \text{Log}\left[\frac{f (h+i x)}{f h-e i}\right]}{d (f h-e i)^3}+\frac{b f^2 (a+b \text{Log}[c (e+f x)]) \text{Log}\left[1+\frac{f h-e i}{i (e+f x)}\right]}{d (f h-e i)^3}-$$
$$\frac{f^2 (a+b \text{Log}[c (e+f x)])^2 \text{Log}\left[1+\frac{f h-e i}{i (e+f x)}\right]}{d (f h-e i)^3}-\frac{b^2 f^2 \text{PolyLog}\left[2,-\frac{f h-e i}{i (e+f x)}\right]}{d (f h-e i)^3}+$$
$$\frac{2 b f^2 (a+b \text{Log}[c (e+f x)]) \text{PolyLog}\left[2,-\frac{f h-e i}{i (e+f x)}\right]}{d (f h-e i)^3}+$$
$$\frac{2 b^2 f^2 \text{PolyLog}\left[2,-\frac{i (e+f x)}{f h-e i}\right]}{d (f h-e i)^3}+\frac{2 b^2 f^2 \text{PolyLog}\left[3,-\frac{f h-e i}{i (e+f x)}\right]}{d (f h-e i)^3}$$

Result (type 4, 453 leaves, 21 steps):

$$\frac{b f i (e+f x) (a+b \text{Log}[c (e+f x)])}{d (f h-e i)^3 (h+i x)}-\frac{f^2 (a+b \text{Log}[c (e+f x)])^2}{2 d (f h-e i)^3}+$$
$$\frac{(a+b \text{Log}[c (e+f x)])^2}{2 d (f h-e i) (h+i x)^2}-\frac{f i (e+f x) (a+b \text{Log}[c (e+f x)])^2}{d (f h-e i)^3 (h+i x)}+$$
$$\frac{f^2 (a+b \text{Log}[c (e+f x)])^3}{3 b d (f h-e i)^3}-\frac{b^2 f^2 \text{Log}[h+i x]}{d (f h-e i)^3}+\frac{3 b f^2 (a+b \text{Log}[c (e+f x)]) \text{Log}\left[\frac{f (h+i x)}{f h-e i}\right]}{d (f h-e i)^3}-$$
$$\frac{f^2 (a+b \text{Log}[c (e+f x)])^2 \text{Log}\left[\frac{f (h+i x)}{f h-e i}\right]}{d (f h-e i)^3}+\frac{3 b^2 f^2 \text{PolyLog}\left[2,-\frac{i (e+f x)}{f h-e i}\right]}{d (f h-e i)^3}-$$
$$\frac{2 b f^2 (a+b \text{Log}[c (e+f x)]) \text{PolyLog}\left[2,-\frac{i (e+f x)}{f h-e i}\right]}{d (f h-e i)^3}+\frac{2 b^2 f^2 \text{PolyLog}\left[3,-\frac{i (e+f x)}{f h-e i}\right]}{d (f h-e i)^3}$$

Problem 314: Result valid but suboptimal antiderivative.

$$\int \frac{(a+b \text{Log}[c (d+e x)^n])^2}{x^3 (f+g x^2)} \, dx$$

Optimal (type 4, 551 leaves, 23 steps):

$$\frac{b^2 e^2 n^2 \, \text{Log}[x]}{d^2 f} - \frac{b\, e\, n\, (d+e x) \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)}{d^2 f x} - \frac{\left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 f x^2} - \frac{g \, \text{Log}\left[-\frac{e x}{d}\right] \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)^2}{f^2} + \frac{g \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^2} + \frac{g \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 f^2} - \frac{b\, e^2 n \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[1-\frac{d}{d+e x}\right]}{d^2 f} + \frac{b^2 e^2 n^2 \, \text{PolyLog}\left[2, \frac{d}{d+e x}\right]}{d^2 f} + \frac{b\, g\, n \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2, -\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^2} + \frac{b\, g\, n \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2, \frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^2} - \frac{2\, b\, g\, n \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2, 1+\frac{e x}{d}\right]}{f^2} - \frac{b^2 g\, n^2 \, \text{PolyLog}\left[3, -\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^2} - \frac{b^2 g\, n^2 \, \text{PolyLog}\left[3, \frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^2} + \frac{2 b^2 g\, n^2 \, \text{PolyLog}\left[3, 1+\frac{e x}{d}\right]}{f^2}$$

Result (type 4, 575 leaves, 25 steps):

$$\frac{b^2 e^2 n^2 \, \text{Log}[x]}{d^2 f} - \frac{b\, e\, n\, (d+e x) \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)}{d^2 f x} - \frac{b\, e^2 n \, \text{Log}\left[-\frac{e x}{d}\right] \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)}{d^2 f} + \frac{e^2 \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 d^2 f} - \frac{\left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 f x^2} - \frac{g \, \text{Log}\left[-\frac{e x}{d}\right] \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)^2}{f^2} + \frac{g \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^2} + \frac{g \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 f^2} + \frac{b\, g\, n \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2, -\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^2} + \frac{b\, g\, n \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2, \frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^2} - \frac{b^2 e^2 n^2 \, \text{PolyLog}\left[2, 1+\frac{e x}{d}\right]}{d^2 f} - \frac{2\, b\, g\, n \left(a+b \, \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2, 1+\frac{e x}{d}\right]}{f^2} - \frac{b^2 g\, n^2 \, \text{PolyLog}\left[3, -\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^2} - \frac{b^2 g\, n^2 \, \text{PolyLog}\left[3, \frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^2} + \frac{2 b^2 g\, n^2 \, \text{PolyLog}\left[3, 1+\frac{e x}{d}\right]}{f^2}$$

Problem 319: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{x^4\,\left(f+g\,x^2\right)}\,dx$$

Optimal (type 4, 694 leaves, 26 steps):

$$-\frac{b^2 e^2 n^2}{3 d^2 f x}-\frac{b^2 e^3 n^2 \mathrm{Log}[x]}{d^3 f}+\frac{b^2 e^3 n^2 \mathrm{Log}[d+e x]}{3 d^3 f}-\frac{b e n \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{3 d f x^2}+\frac{2 b e^2 n (d+e x) \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{3 d^3 f x}-\frac{2 b e g n \mathrm{Log}\left[-\frac{e x}{d}\right] \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)}{d f^2}-\frac{\left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)^2}{3 f x^3}+\frac{g (d+e x) \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)^2}{d f^2 x}+\frac{g^{3/2} \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)^2 \mathrm{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 (-f)^{5/2}}-\frac{g^{3/2} \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right)^2 \mathrm{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 (-f)^{5/2}}+\frac{2 b e^3 n \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right) \mathrm{Log}\left[1-\frac{d}{d+e x}\right]}{3 d^3 f}-\frac{2 b^2 e^3 n^2 \mathrm{PolyLog}\left[2,\frac{d}{d+e x}\right]}{3 d^3 f}-\frac{b g^{3/2} n \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right) \mathrm{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{(-f)^{5/2}}+\frac{b g^{3/2} n \left(a+b \mathrm{Log}\left[c (d+e x)^n\right]\right) \mathrm{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{(-f)^{5/2}}-\frac{2 b^2 e g n^2 \mathrm{PolyLog}\left[2,1+\frac{e x}{d}\right]}{d f^2}+\frac{b^2 g^{3/2} n^2 \mathrm{PolyLog}\left[3,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{(-f)^{5/2}}-\frac{b^2 g^{3/2} n^2 \mathrm{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{(-f)^{5/2}}$$

Result (type 4, 717 leaves, 28 steps):

$$-\frac{b^2 e^2 n^2}{3 d^2 f x}-\frac{b^2 e^3 n^2 \text{Log}[x]}{d^3 f}+\frac{b^2 e^3 n^2 \text{Log}[d+e x]}{3 d^3 f}-\frac{b e n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{3 d f x^2}+\frac{2 b e^2 n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{3 d^3 f x}+\frac{2 b e^3 n \text{Log}\left[-\frac{e x}{d}\right] \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{3 d^3 f}-\frac{2 b e g n \text{Log}\left[-\frac{e x}{d}\right] \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{d f^2}-\frac{e^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{3 d^3 f}-\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{3 f x^3}+\frac{g (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{d f^2 x}+\frac{g^{3/2} \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 (-f)^{5/2}}-\frac{g^{3/2} \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 (-f)^{5/2}}-\frac{b g^{3/2} n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{(-f)^{5/2}}+\frac{b g^{3/2} n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{(-f)^{5/2}}+\frac{2 b^2 e^3 n^2 \text{PolyLog}\left[2,1+\frac{e x}{d}\right]}{3 d^3 f}-\frac{2 b^2 e g n^2 \text{PolyLog}\left[2,1+\frac{e x}{d}\right]}{d f^2}+\frac{b^2 g^{3/2} n^2 \text{PolyLog}\left[3,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{(-f)^{5/2}}-\frac{b^2 g^{3/2} n^2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{(-f)^{5/2}}$$

Problem 324: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{x^3 \left(f+g x^2\right)^2} \, dx$$

Optimal (type 4, 970 leaves, 36 steps):

$$\frac{b^2 e^2 n^2 \text{Log}[x]}{d^2 f^2}-\frac{b e n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{d^2 f^2 x}+\frac{e^2 g \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 f^2 \left(e^2 f+d^2 g\right)}-$$

$$\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 f^2 x^2}-\frac{g \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 f^2 \left(f+g x^2\right)}-\frac{2 g \text{Log}\left[-\frac{e x}{d}\right] \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{f^3}-$$

$$\frac{b e \left(e f+d \sqrt{-f} \sqrt{g}\right) g n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^3 \left(e^2 f+d^2 g\right)}+$$

$$\frac{g \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^3}-$$

$$\frac{b e \left(e f-d \sqrt{-f} \sqrt{g}\right) g n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 f^3 \left(e^2 f+d^2 g\right)}+$$

$$\frac{g \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^3}-\frac{b e^2 n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[1-\frac{d}{d+e x}\right]}{d^2 f^2}+$$

$$\frac{b^2 e^2 n^2 \text{PolyLog}\left[2,\frac{d}{d+e x}\right]}{d^2 f^2}-\frac{b^2 e \left(e \sqrt{-f}+d \sqrt{g}\right) g n^2 \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 (-f)^{5/2} \left(e^2 f+d^2 g\right)}+$$

$$\frac{2 b g n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^3}-$$

$$\frac{b^2 e \left(e f+d \sqrt{-f} \sqrt{g}\right) g n^2 \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^3 \left(e^2 f+d^2 g\right)}+$$

$$\frac{2 b g n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^3}-$$

$$\frac{4 b g n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,1+\frac{e x}{d}\right]}{f^3}-\frac{2 b^2 g n^2 \text{PolyLog}\left[3,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^3}-$$

$$\frac{2 b^2 g n^2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^3}+\frac{4 b^2 g n^2 \text{PolyLog}\left[3,1+\frac{e x}{d}\right]}{f^3}$$

Result (type 4, 994 leaves, 38 steps) :

$$\frac{b^2 e^2 n^2 \operatorname{Log}[x]}{d^2 f^2} - \frac{b e n \left(d+e x\right) \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right)}{d^2 f^2 x} - \frac{b e^2 n \operatorname{Log}\left[-\frac{e x}{d}\right] \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right)}{d^2 f^2} +$$

$$\frac{e^2 \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right)^2}{2 d^2 f^2} + \frac{e^2 g \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right)^2}{2 f^2 \left(e^2 f+d^2 g\right)} - \frac{\left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right)^2}{2 f^2 x^2} -$$

$$\frac{g \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right)^2}{2 f^2 \left(f+g x^2\right)} - \frac{2 g \operatorname{Log}\left[-\frac{e x}{d}\right] \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right)^2}{f^3} -$$

$$\frac{b e \left(e f+d \sqrt{-f} \sqrt{g}\right) g n \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^3 \left(e^2 f+d^2 g\right)} +$$

$$\frac{g \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^3} -$$

$$\frac{b e \left(e f-d \sqrt{-f} \sqrt{g}\right) g n \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 f^3 \left(e^2 f+d^2 g\right)} +$$

$$\frac{g \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^3} -$$

$$\frac{b^2 e \left(e \sqrt{-f}+d \sqrt{g}\right) g n^2 \operatorname{PolyLog}\left[2, -\frac{\sqrt{g} \left(d+e x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 \left(-f\right)^{5/2} \left(e^2 f+d^2 g\right)} +$$

$$\frac{2 b g n \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right) \operatorname{PolyLog}\left[2, -\frac{\sqrt{g} \left(d+e x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^3} -$$

$$\frac{b^2 e \left(e f+d \sqrt{-f} \sqrt{g}\right) g n^2 \operatorname{PolyLog}\left[2, \frac{\sqrt{g} \left(d+e x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^3 \left(e^2 f+d^2 g\right)} +$$

$$\frac{2 b g n \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{\sqrt{g} \left(d+e x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^3} - \frac{b^2 e^2 n^2 \operatorname{PolyLog}\left[2, 1+\frac{e x}{d}\right]}{d^2 f^2} -$$

$$\frac{4 b g n \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right) \operatorname{PolyLog}\left[2, 1+\frac{e x}{d}\right]}{f^3} - \frac{2 b^2 g n^2 \operatorname{PolyLog}\left[3, -\frac{\sqrt{g} \left(d+e x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^3} -$$

$$\frac{2 b^2 g n^2 \operatorname{PolyLog}\left[3, \frac{\sqrt{g} \left(d+e x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^3} + \frac{4 b^2 g n^2 \operatorname{PolyLog}\left[3, 1+\frac{e x}{d}\right]}{f^3}$$

Problem 363: Result valid but suboptimal antiderivative.

$$\int \frac{\operatorname{Log}\left[f x^m\right] \left(a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]\right)}{x^2} \, dx$$

Optimal (type 4, 102 leaves, 6 steps) :

$$\frac{b\,e\,m\,n\,\text{Log}[x]}{d}-\frac{b\,e\,n\,\text{Log}\left[1+\frac{d}{e\,x}\right]\,\text{Log}[f\,x^m]}{d}-\frac{b\,e\,m\,n\,\text{Log}[d+e\,x]}{d}-\left(\frac{m}{x}+\frac{\text{Log}[f\,x^m]}{x}\right)\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)+\frac{b\,e\,m\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{d}$$

Result (type 4, 120 leaves, 8 steps):

$$\frac{b\,e\,m\,n\,\text{Log}[x]}{d}+\frac{b\,e\,n\,\text{Log}[f\,x^m]^2}{2\,d\,m}-\frac{b\,e\,m\,n\,\text{Log}[d+e\,x]}{d}-\left(\frac{m}{x}+\frac{\text{Log}[f\,x^m]}{x}\right)\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)-\frac{b\,e\,n\,\text{Log}[f\,x^m]\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d}-\frac{b\,e\,m\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d}$$

Problem 364: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Log}[f\,x^m]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{x^3}\,dx$$

Optimal (type 4, 156 leaves, 7 steps):

$$-\frac{3\,b\,e\,m\,n}{4\,d\,x}-\frac{b\,e^2\,m\,n\,\text{Log}[x]}{4\,d^2}-\frac{b\,e\,n\,\text{Log}[f\,x^m]}{2\,d\,x}+\frac{b\,e^2\,n\,\text{Log}\left[1+\frac{d}{e\,x}\right]\,\text{Log}[f\,x^m]}{2\,d^2}+\frac{b\,e^2\,m\,n\,\text{Log}[d+e\,x]}{4\,d^2}-\frac{1}{4}\left(\frac{m}{x^2}+\frac{2\,\text{Log}[f\,x^m]}{x^2}\right)\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)-\frac{b\,e^2\,m\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{2\,d^2}$$

Result (type 4, 175 leaves, 9 steps):

$$-\frac{3\,b\,e\,m\,n}{4\,d\,x}-\frac{b\,e^2\,m\,n\,\text{Log}[x]}{4\,d^2}-\frac{b\,e\,n\,\text{Log}[f\,x^m]}{2\,d\,x}-\frac{b\,e^2\,n\,\text{Log}[f\,x^m]^2}{4\,d^2\,m}+\frac{b\,e^2\,m\,n\,\text{Log}[d+e\,x]}{4\,d^2}-\frac{1}{4}\left(\frac{m}{x^2}+\frac{2\,\text{Log}[f\,x^m]}{x^2}\right)\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)+\frac{b\,e^2\,n\,\text{Log}[f\,x^m]\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{2\,d^2}+\frac{b\,e^2\,m\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{2\,d^2}$$

Problem 365: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Log}[f\,x^m]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{x^4}\,dx$$

Optimal (type 4, 193 leaves, 9 steps):

$$-\frac{5\,b\,e\,m\,n}{36\,d\,x^2}+\frac{4\,b\,e^2\,m\,n}{9\,d^2\,x}+\frac{b\,e^3\,m\,n\,\text{Log}[x]}{9\,d^3}-\frac{b\,e\,n\,\text{Log}[f\,x^m]}{6\,d\,x^2}+\frac{b\,e^2\,n\,\text{Log}[f\,x^m]}{3\,d^2\,x}-\frac{b\,e^3\,n\,\text{Log}\left[1+\frac{d}{e\,x}\right]\,\text{Log}[f\,x^m]}{3\,d^3}-\frac{b\,e^3\,m\,n\,\text{Log}[d+e\,x]}{9\,d^3}-\frac{1}{9}\left(\frac{m}{x^3}+\frac{3\,\text{Log}[f\,x^m]}{x^3}\right)\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)+\frac{b\,e^3\,m\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{3\,d^3}$$

Result (type 4, 212 leaves, 10 steps):

$$-\frac{5\,b\,e\,m\,n}{36\,d\,x^2}+\frac{4\,b\,e^2\,m\,n}{9\,d^2\,x}+\frac{b\,e^3\,m\,n\,\text{Log}[x]}{9\,d^3}-\frac{b\,e\,n\,\text{Log}[f\,x^m]}{6\,d\,x^2}+\frac{b\,e^2\,n\,\text{Log}[f\,x^m]}{3\,d^2\,x}+\frac{b\,e^3\,n\,\text{Log}[f\,x^m]^2}{6\,d^3\,m}-\frac{b\,e^3\,m\,n\,\text{Log}[d+e\,x]}{9\,d^3}-\frac{1}{9}\left(\frac{m}{x^3}+\frac{3\,\text{Log}[f\,x^m]}{x^3}\right)\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)-\frac{b\,e^3\,n\,\text{Log}[f\,x^m]\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{3\,d^3}-\frac{b\,e^3\,m\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{3\,d^3}$$

Problem 366: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Log}[f\,x^m]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{x^5}\,dx$$

Optimal (type 4, 230 leaves, 11 steps):

$$-\frac{7\,b\,e\,m\,n}{144\,d\,x^3}+\frac{3\,b\,e^2\,m\,n}{32\,d^2\,x^2}-\frac{5\,b\,e^3\,m\,n}{16\,d^3\,x}-\frac{b\,e^4\,m\,n\,\text{Log}[x]}{16\,d^4}-\frac{b\,e\,n\,\text{Log}[f\,x^m]}{12\,d\,x^3}+\frac{b\,e^2\,n\,\text{Log}[f\,x^m]}{8\,d^2\,x^2}-\frac{b\,e^3\,n\,\text{Log}[f\,x^m]}{4\,d^3\,x}+\frac{b\,e^4\,n\,\text{Log}\left[1+\frac{d}{e\,x}\right]\,\text{Log}[f\,x^m]}{4\,d^4}+\frac{b\,e^4\,m\,n\,\text{Log}[d+e\,x]}{16\,d^4}-\frac{1}{16}\left(\frac{m}{x^4}+\frac{4\,\text{Log}[f\,x^m]}{x^4}\right)\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)-\frac{b\,e^4\,m\,n\,\text{PolyLog}\left[2,-\frac{d}{e\,x}\right]}{4\,d^4}$$

Result (type 4, 249 leaves, 11 steps):

$$-\frac{7\,b\,e\,m\,n}{144\,d\,x^3}+\frac{3\,b\,e^2\,m\,n}{32\,d^2\,x^2}-\frac{5\,b\,e^3\,m\,n}{16\,d^3\,x}-\frac{b\,e^4\,m\,n\,\text{Log}[x]}{16\,d^4}-\frac{b\,e\,n\,\text{Log}[f\,x^m]}{12\,d\,x^3}+\frac{b\,e^2\,n\,\text{Log}[f\,x^m]}{8\,d^2\,x^2}-\frac{b\,e^3\,n\,\text{Log}[f\,x^m]}{4\,d^3\,x}-\frac{b\,e^4\,n\,\text{Log}[f\,x^m]^2}{8\,d^4\,m}+\frac{b\,e^4\,m\,n\,\text{Log}[d+e\,x]}{16\,d^4}-\frac{1}{16}\left(\frac{m}{x^4}+\frac{4\,\text{Log}[f\,x^m]}{x^4}\right)\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)+\frac{b\,e^4\,n\,\text{Log}[f\,x^m]\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{4\,d^4}+\frac{b\,e^4\,m\,n\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{4\,d^4}$$

Problem 367: Result valid but suboptimal antiderivative.

$$\int x^2\,\text{Log}[f\,x^m]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,dx$$

Optimal (type 4, 705 leaves, 52 steps):

$$\frac{2\,a\,b\,d^2\,m\,n\,x}{9\,e^2}-\frac{71\,b^2\,d^2\,m\,n^2\,x}{54\,e^2}+\frac{b\,d^2\,m\,n\,(6\,a-11\,b\,n)\,x}{9\,e^2}+\frac{19\,b^2\,d\,m\,n^2\,x^2}{54\,e}-$$
$$\frac{2}{27}\,b^2\,m\,n^2\,x^3-\frac{2\,a\,b\,d^2\,n\,x\,\mathrm{Log}[f\,x^m]}{3\,e^2}+\frac{11\,b^2\,d^2\,n^2\,x\,\mathrm{Log}[f\,x^m]}{9\,e^2}-\frac{5\,b^2\,d\,n^2\,x^2\,\mathrm{Log}[f\,x^m]}{18\,e}+$$
$$\frac{2}{27}\,b^2\,n^2\,x^3\,\mathrm{Log}\left[f\,x^m\right]+\frac{23\,b^2\,d^3\,m\,n^2\,\mathrm{Log}[d+e\,x]}{54\,e^3}+\frac{5\,b^2\,d^3\,m\,n^2\,\mathrm{Log}\left[-\frac{e\,x}{d}\right]\,\mathrm{Log}[d+e\,x]}{9\,e^3}-$$
$$\frac{5\,b^2\,d^3\,n^2\,\mathrm{Log}[f\,x^m]\,\mathrm{Log}[d+e\,x]}{9\,e^3}+\frac{8\,b^2\,d^2\,m\,n\,(d+e\,x)\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}{9\,e^3}+$$
$$\frac{2\,b^2\,d^3\,m\,n\,\mathrm{Log}\left[-\frac{e\,x}{d}\right]\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}{3\,e^3}-\frac{2\,b^2\,d^2\,n\,(d+e\,x)\,\mathrm{Log}[f\,x^m]\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}{3\,e^3}-$$
$$\frac{5\,b\,d\,m\,n\,x^2\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{18\,e}+\frac{4}{27}\,b\,m\,n\,x^3\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)+$$
$$\frac{b\,d\,n\,x^2\,\mathrm{Log}[f\,x^m]\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{3\,e}-\frac{2}{9}\,b\,n\,x^3\,\mathrm{Log}\left[f\,x^m\right]\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)-$$
$$\frac{d^3\,m\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{9\,e^3}-\frac{1}{9}\,m\,x^3\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2-$$
$$\frac{d^3\,m\,\mathrm{Log}\left[-\frac{e\,x}{d}\right]\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{3\,e^3}+\frac{d^3\,\mathrm{Log}[f\,x^m]\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{3\,e^3}+$$
$$\frac{1}{3}\,x^3\,\mathrm{Log}\left[f\,x^m\right]\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2+\frac{11\,b^2\,d^3\,m\,n^2\,\mathrm{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{9\,e^3}-$$
$$\frac{2\,b\,d^3\,m\,n\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\,\mathrm{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{3\,e^3}+\frac{2\,b^2\,d^3\,m\,n^2\,\mathrm{PolyLog}\left[3,1+\frac{e\,x}{d}\right]}{3\,e^3}$$

Result (type 4, 902 leaves, 50 steps) :

$$\frac{2\,a\,b\,d^2\,m\,n\,x}{3\,e^2}-\frac{151\,b^2\,d^2\,m\,n^2\,x}{54\,e^2}-\frac{a\,b\,d\,m\,n\,x^2}{6\,e}+\frac{7\,b^2\,d\,m\,n^2\,x^2}{27\,e}+\frac{2}{27}\,a\,b\,m\,n\,x^3-\frac{4}{81}\,b^2\,m\,n^2\,x^3+$$
$$\frac{b^2\,d\,m\,n^2\,(d+e\,x)^2}{6\,e^3}-\frac{2\,b^2\,m\,n^2\,(d+e\,x)^3}{81\,e^3}+\frac{11\,a\,b\,d^3\,m\,n\,\mathrm{Log}[x]}{9\,e^3}+\frac{23\,b^2\,d^3\,m\,n^2\,\mathrm{Log}[x]}{54\,e^3}+$$
$$\frac{2\,b^2\,d^2\,n^2\,x\,\mathrm{Log}[f\,x^m]}{e^2}-\frac{b^2\,d\,n^2\,(d+e\,x)^2\,\mathrm{Log}[f\,x^m]}{2\,e^3}+\frac{2\,b^2\,n^2\,(d+e\,x)^3\,\mathrm{Log}[f\,x^m]}{27\,e^3}+$$
$$\frac{13\,b^2\,d^3\,m\,n^2\,\mathrm{Log}[d+e\,x]}{54\,e^3}-\frac{2\,a\,b\,d^3\,m\,n\,\mathrm{Log}\left[-\frac{e\,x}{d}\right]\,\mathrm{Log}[d+e\,x]}{3\,e^3}+\frac{b^2\,d^3\,m\,n^2\,\mathrm{Log}[d+e\,x]^2}{9\,e^3}+$$
$$\frac{b^2\,d^3\,m\,n^2\,\mathrm{Log}[x]\,\mathrm{Log}[d+e\,x]^2}{3\,e^3}-\frac{b^2\,d^3\,n^2\,\mathrm{Log}[f\,x^m]\,\mathrm{Log}[d+e\,x]^2}{3\,e^3}-\frac{b^2\,d\,m\,n\,x^2\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}{6\,e}+$$
$$\frac{2}{27}\,b^2\,m\,n\,x^3\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]+\frac{2\,b^2\,d^2\,m\,n\,(d+e\,x)\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}{3\,e^3}+$$
$$\frac{11\,b^2\,d^3\,m\,n\,\mathrm{Log}\left[-\frac{e\,x}{d}\right]\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}{9\,e^3}-\frac{2\,b^2\,d^3\,m\,n\,\mathrm{Log}[x]\,\mathrm{Log}[d+e\,x]\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}{3\,e^3}+$$
$$\frac{b^2\,d^3\,m\,\mathrm{Log}[x]\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]^2}{3\,e^3}-\frac{b^2\,d^3\,m\,\mathrm{Log}\left[-\frac{e\,x}{d}\right]\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]^2}{3\,e^3}+$$
$$\frac{1}{27}\,b\,m\,n\left(\frac{18\,d^2\,(d+e\,x)}{e^3}-\frac{9\,d\,(d+e\,x)^2}{e^3}+\frac{2\,(d+e\,x)^3}{e^3}-\frac{6\,d^3\,\mathrm{Log}[d+e\,x]}{e^3}\right)\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)-$$
$$\frac{1}{9}\,b\,n\,\mathrm{Log}[f\,x^m]\left(\frac{18\,d^2\,(d+e\,x)}{e^3}-\frac{9\,d\,(d+e\,x)^2}{e^3}+\frac{2\,(d+e\,x)^3}{e^3}-\frac{6\,d^3\,\mathrm{Log}[d+e\,x]}{e^3}\right)$$
$$\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)-\frac{1}{9}\,m\,x^3\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2+$$
$$\frac{1}{3}\,x^3\,\mathrm{Log}[f\,x^m]\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2-\frac{2\,a\,b\,d^3\,m\,n\,\mathrm{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{3\,e^3}+$$
$$\frac{11\,b^2\,d^3\,m\,n^2\,\mathrm{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{9\,e^3}-$$
$$\frac{2\,b^2\,d^3\,m\,n\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\,\mathrm{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{3\,e^3}+\frac{2\,b^2\,d^3\,m\,n^2\,\mathrm{PolyLog}\left[3,1+\frac{e\,x}{d}\right]}{3\,e^3}$$

Problem 370: Unable to integrate problem.

$$\int\frac{\mathrm{Log}[f\,x^m]\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{x}\,dx$$

Optimal (type 4, 823 leaves, ? steps):

$$\frac{1}{2} m \text{Log}[x]^2 \left(a - b n \text{Log}[d + e x] + b \text{Log}\left[c (d + e x)^n\right]\right)^2 +$$
$$\text{Log}[x] \left(-m \text{Log}[x] + \text{Log}[f x^m]\right) \left(a - b n \text{Log}[d + e x] + b \text{Log}\left[c (d + e x)^n\right]\right)^2 +$$
$$2 b n \left(-m \text{Log}[x] + \text{Log}[f x^m]\right) \left(a - b n \text{Log}[d + e x] + b \text{Log}\left[c (d + e x)^n\right]\right)$$
$$\left(\text{Log}[x] \left(\text{Log}[d + e x] - \text{Log}\left[1 + \frac{e x}{d}\right]\right) - \text{PolyLog}\left[2, -\frac{e x}{d}\right]\right) +$$
$$2 b m n \left(a - b n \text{Log}[d + e x] + b \text{Log}\left[c (d + e x)^n\right]\right)$$
$$\left(\frac{1}{2} \text{Log}[x]^2 \left(\text{Log}[d + e x] - \text{Log}\left[1 + \frac{e x}{d}\right]\right) - \text{Log}[x] \text{PolyLog}\left[2, -\frac{e x}{d}\right] + \text{PolyLog}\left[3, -\frac{e x}{d}\right]\right) -$$
$$b^2 n^2 \left(m \text{Log}[x] - \text{Log}[f x^m]\right)$$
$$\left(\text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d + e x]^2 + 2 \text{Log}[d + e x] \text{PolyLog}\left[2, 1 + \frac{e x}{d}\right] - 2 \text{PolyLog}\left[3, 1 + \frac{e x}{d}\right]\right) +$$
$$\frac{1}{12} b^2 m n^2 \left(\text{Log}\left[-\frac{e x}{d}\right]^4 + 6 \text{Log}\left[-\frac{e x}{d}\right]^2 \text{Log}\left[-\frac{e x}{d + e x}\right]^2 -\right.$$
$$4 \left(\text{Log}\left[-\frac{e x}{d}\right] + \text{Log}\left[\frac{d}{d + e x}\right]\right) \text{Log}\left[-\frac{e x}{d + e x}\right]^3 + \text{Log}\left[-\frac{e x}{d + e x}\right]^4 +$$
$$6 \text{Log}[x]^2 \text{Log}[d + e x]^2 + 4 \left(2 \text{Log}\left[-\frac{e x}{d}\right]^3 - 3 \text{Log}[x]^2 \text{Log}[d + e x]\right) \text{Log}\left[1 + \frac{e x}{d}\right] +$$
$$6 \left(\text{Log}[x] - \text{Log}\left[-\frac{e x}{d}\right]\right) \left(\text{Log}[x] + 3 \text{Log}\left[-\frac{e x}{d}\right]\right) \text{Log}\left[1 + \frac{e x}{d}\right]^2 - 4 \text{Log}\left[-\frac{e x}{d}\right]^2 \text{Log}\left[-\frac{e x}{d + e x}\right]$$
$$\left(\text{Log}\left[-\frac{e x}{d}\right] + 3 \text{Log}\left[1 + \frac{e x}{d}\right]\right) + 12 \left(\text{Log}\left[-\frac{e x}{d}\right]^2 - 2 \text{Log}\left[-\frac{e x}{d}\right] \left(\text{Log}\left[-\frac{e x}{d + e x}\right] + \text{Log}\left[1 + \frac{e x}{d}\right]\right) +\right.$$
$$\left.2 \text{Log}[x] \left(-\text{Log}[d + e x] + \text{Log}\left[1 + \frac{e x}{d}\right]\right)\right) \text{PolyLog}\left[2, -\frac{e x}{d}\right] -$$
$$12 \text{Log}\left[-\frac{e x}{d + e x}\right]^2 \text{PolyLog}\left[2, \frac{e x}{d + e x}\right] + 12 \left(\text{Log}\left[-\frac{e x}{d}\right] - \text{Log}\left[-\frac{e x}{d + e x}\right]\right)^2 \text{PolyLog}\left[2, 1 + \frac{e x}{d}\right] +$$
$$24 \left(\text{Log}[x] - \text{Log}\left[-\frac{e x}{d}\right]\right) \text{Log}\left[1 + \frac{e x}{d}\right] \text{PolyLog}\left[2, 1 + \frac{e x}{d}\right] +$$
$$24 \left(\text{Log}\left[-\frac{e x}{d + e x}\right] + \text{Log}[d + e x]\right) \text{PolyLog}\left[3, -\frac{e x}{d}\right] +$$
$$24 \text{Log}\left[-\frac{e x}{d + e x}\right] \text{PolyLog}\left[3, \frac{e x}{d + e x}\right] + 24 \left(-\text{Log}[x] + \text{Log}\left[-\frac{e x}{d + e x}\right]\right) \text{PolyLog}\left[3, 1 + \frac{e x}{d}\right] -$$
$$\left.24 \left(\text{PolyLog}\left[4, -\frac{e x}{d}\right] + \text{PolyLog}\left[4, \frac{e x}{d + e x}\right] - \text{PolyLog}\left[4, 1 + \frac{e x}{d}\right]\right)\right)$$

Result (type 8, 72 leaves, 1 step):

$$\frac{\text{Log}[f x^m]^2 \left(a + b \text{Log}\left[c (d + e x)^n\right]\right)^2}{2 m} - \frac{b e n \text{ Unintegrable}\left[\frac{\text{Log}[f x^m]^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{d+e x}, x\right]}{m}$$

Problem 371: Unable to integrate problem.

$$\int \frac{\text{Log}[f x^m] \left(a + b \text{Log}\left[c (d + e x)^n\right]\right)^2}{x^2} \, dx$$

Optimal (type 4, 607 leaves, ? steps):

$$-\frac{b^2 e m n^2 \text{Log}[x]^2 \text{Log}[d+e x]}{d}+\frac{2 b^2 e m n^2 \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]}{d}+$$
$$\frac{2 b^2 e n^2 \text{Log}[x] \text{Log}[f x^m] \text{Log}[d+e x]}{d}-\frac{b^2 e m n^2 \text{Log}[d+e x]^2}{d}-\frac{b^2 m n^2 \text{Log}[d+e x]^2}{x}+$$
$$\frac{b^2 e m n^2 \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]^2}{d}-\frac{b^2 e n^2 \text{Log}[f x^m] \text{Log}[d+e x]^2}{d}-\frac{b^2 n^2 \text{Log}[f x^m] \text{Log}[d+e x]^2}{x}-$$
$$\frac{1}{d x} 2 b n \left(m \text{Log}[x]-\text{Log}\left[f x^m\right]\right) \left(e x \text{Log}\left[-\frac{e x}{d}\right]-(d+e x) \text{Log}[d+e x]\right)$$
$$\left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)-\frac{m \text{Log}[x] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{x}-$$
$$\frac{1}{x}\left(m-m \text{Log}[x]+\text{Log}\left[f x^m\right]\right) \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+$$
$$\frac{b^2 e m n^2 \text{Log}[x]^2 \text{Log}\left[1+\frac{e x}{d}\right]}{d}-\frac{2 b^2 e n^2 \text{Log}[x] \text{Log}[f x^m] \text{Log}\left[1+\frac{e x}{d}\right]}{d}-$$
$$\frac{2 b^2 e n^2 \text{Log}[f x^m] \text{PolyLog}\left[2,-\frac{e x}{d}\right]}{d}+\frac{1}{d x}$$
$$b m n \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right) \left(2 e x \text{Log}\left[-\frac{e x}{d}\right]-2 (d+e x) \text{Log}[d+e x]-\right.$$
$$\left.2 d \text{Log}[x] \text{Log}[d+e x]+e x \left(\text{Log}[x]^2-2 \left(\text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]+\text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)\right)\right)+$$
$$\frac{2 b^2 e m n^2 (1+\text{Log}[d+e x]) \text{PolyLog}\left[2,1+\frac{e x}{d}\right]}{d}+\frac{2 b^2 e m n^2 \text{PolyLog}\left[3,-\frac{e x}{d}\right]}{d}-$$
$$\frac{2 b^2 e m n^2 \text{PolyLog}\left[3,1+\frac{e x}{d}\right]}{d}$$

Result (type 8, 28 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{\text{Log}[f x^m] \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{x^2}, x\right]$$

Problem 372: Unable to integrate problem.

$$\int \frac{\text{Log}[f x^m] \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{x^3} \, dx$$

Optimal (type 4, 939 leaves, ? steps):

$$\frac{b^2 e^2 m n^2 \text{Log}[x]}{d^2} - \frac{b^2 e^2 m n^2 \text{Log}[x]^2}{2 d^2} + \frac{b^2 e^2 m n^2 \text{Log}\left[-\frac{e x}{d}\right]}{2 d^2} + \frac{b^2 e^2 n^2 \text{Log}[x] \text{Log}[f x^m]}{d^2} -$$
$$\frac{3 b^2 e^2 m n^2 \text{Log}[d + e x]}{2 d^2} - \frac{3 b^2 e m n^2 \text{Log}[d + e x]}{2 d x} + \frac{b^2 e^2 m n^2 \text{Log}[x] \text{Log}[d + e x]}{d^2} +$$
$$\frac{b^2 e^2 m n^2 \text{Log}[x]^2 \text{Log}[d + e x]}{2 d^2} - \frac{b^2 e^2 m n^2 \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d + e x]}{2 d^2} - \frac{b^2 e^2 n^2 \text{Log}[f x^m] \text{Log}[d + e x]}{d^2} -$$
$$\frac{b^2 e n^2 \text{Log}[f x^m] \text{Log}[d + e x]}{d x} - \frac{b^2 e^2 n^2 \text{Log}[x] \text{Log}[f x^m] \text{Log}[d + e x]}{d^2} +$$
$$\frac{b^2 e^2 m n^2 \text{Log}[d + e x]^2}{4 d^2} - \frac{b^2 m n^2 \text{Log}[d + e x]^2}{4 x^2} - \frac{b^2 e^2 m n^2 \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d + e x]^2}{2 d^2} +$$
$$\frac{b^2 e^2 n^2 \text{Log}[f x^m] \text{Log}[d + e x]^2}{2 d^2} - \frac{b^2 n^2 \text{Log}[f x^m] \text{Log}[d + e x]^2}{2 x^2} + \frac{1}{d^2 x^2}$$
$$b n \left(m \text{Log}[x] - \text{Log}[f x^m]\right) \left(e^2 x^2 \text{Log}\left[-\frac{e x}{d}\right] + (d + e x) \left(e x + (d - e x) \text{Log}[d + e x]\right)\right)$$
$$\left(a - b n \text{Log}[d + e x] + b \text{Log}\left[c (d + e x)^n\right]\right) - \frac{m \text{Log}[x] \left(a - b n \text{Log}[d + e x] + b \text{Log}\left[c (d + e x)^n\right]\right)^2}{2 x^2} -$$
$$\frac{1}{4 x^2} \left(m - 2 m \text{Log}[x] + 2 \text{Log}[f x^m]\right) \left(a - b n \text{Log}[d + e x] + b \text{Log}\left[c (d + e x)^n\right]\right)^2 -$$
$$\frac{b^2 e^2 m n^2 \text{Log}[x] \text{Log}\left[1 + \frac{e x}{d}\right]}{d^2} - \frac{b^2 e^2 m n^2 \text{Log}[x]^2 \text{Log}\left[1 + \frac{e x}{d}\right]}{2 d^2} +$$
$$\frac{b^2 e^2 n^2 \text{Log}[x] \text{Log}[f x^m] \text{Log}\left[1 + \frac{e x}{d}\right]}{d^2} - \frac{b^2 e^2 n^2 \left(m - \text{Log}[f x^m]\right) \text{PolyLog}\left[2, -\frac{e x}{d}\right]}{d^2} -$$
$$\frac{1}{2 d^2 x^2} b m n \left(a - b n \text{Log}[d + e x] + b \text{Log}\left[c (d + e x)^n\right]\right)$$
$$\left(e x (d + e x) + e^2 x^2 \text{Log}\left[-\frac{e x}{d}\right] + \left(d^2 - e^2 x^2\right) \text{Log}[d + e x] + 2 d^2 \text{Log}[x] \text{Log}[d + e x] + \right.$$
$$\left. e x \left(e x \text{Log}[x]^2 + 2 d \left(1 + \text{Log}[x]\right) - 2 e x \left(\text{Log}[x] \text{Log}\left[1 + \frac{e x}{d}\right] + \text{PolyLog}\left[2, -\frac{e x}{d}\right]\right)\right)\right) -$$
$$\frac{b^2 e^2 m n^2 \left(1 + 2 \text{Log}[d + e x]\right) \text{PolyLog}\left[2, 1 + \frac{e x}{d}\right]}{2 d^2} - \frac{b^2 e^2 m n^2 \text{PolyLog}\left[3, -\frac{e x}{d}\right]}{d^2} +$$
$$\frac{b^2 e^2 m n^2 \text{PolyLog}\left[3, 1 + \frac{e x}{d}\right]}{d^2}$$

Result (type 8, 28 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{\text{Log}[f x^m] \left(a + b \text{Log}\left[c (d + e x)^n\right]\right)^2}{x^3}, x\right]$$

Problem 374: Unable to integrate problem.

$$\int \frac{\text{Log}[x] \text{Log}[a + b x]^2}{x} \, dx$$

Optimal (type 4, 519 leaves, ? steps):

$$\frac{1}{12}\left(\text{Log}\left[-\frac{b x}{a}\right]^4+6 \text{Log}\left[-\frac{b x}{a}\right]^2 \text{Log}\left[-\frac{b x}{a+b x}\right]^2-4 \left(\text{Log}\left[-\frac{b x}{a}\right]+\text{Log}\left[\frac{a}{a+b x}\right]\right) \text{Log}\left[-\frac{b x}{a+b x}\right]^3+\right.$$
$$\text{Log}\left[-\frac{b x}{a+b x}\right]^4+6 \text{Log}[x]^2 \text{Log}[a+b x]^2+4 \left(2 \text{Log}\left[-\frac{b x}{a}\right]^3-3 \text{Log}[x]^2 \text{Log}[a+b x]\right) \text{Log}\left[1+\frac{b x}{a}\right]+$$
$$6 \left(\text{Log}[x]-\text{Log}\left[-\frac{b x}{a}\right]\right) \left(\text{Log}[x]+3 \text{Log}\left[-\frac{b x}{a}\right]\right) \text{Log}\left[1+\frac{b x}{a}\right]^2-$$
$$4 \text{Log}\left[-\frac{b x}{a}\right]^2 \text{Log}\left[-\frac{b x}{a+b x}\right] \left(\text{Log}\left[-\frac{b x}{a}\right]+3 \text{Log}\left[1+\frac{b x}{a}\right]\right)+$$
$$12 \left(\text{Log}\left[-\frac{b x}{a}\right]^2-2 \text{Log}\left[-\frac{b x}{a}\right] \left(\text{Log}\left[-\frac{b x}{a+b x}\right]+\text{Log}\left[1+\frac{b x}{a}\right]\right)+\right.$$
$$\left.2 \text{Log}[x] \left(-\text{Log}[a+b x]+\text{Log}\left[1+\frac{b x}{a}\right]\right)\right) \text{PolyLog}\left[2,-\frac{b x}{a}\right]-$$
$$12 \text{Log}\left[-\frac{b x}{a+b x}\right]^2 \text{PolyLog}\left[2,\frac{b x}{a+b x}\right]+12 \left(\text{Log}\left[-\frac{b x}{a}\right]-\text{Log}\left[-\frac{b x}{a+b x}\right]\right)^2 \text{PolyLog}\left[2,1+\frac{b x}{a}\right]+$$
$$24 \left(\text{Log}[x]-\text{Log}\left[-\frac{b x}{a}\right]\right) \text{Log}\left[1+\frac{b x}{a}\right] \text{PolyLog}\left[2,1+\frac{b x}{a}\right]+$$
$$24 \left(\text{Log}\left[-\frac{b x}{a+b x}\right]+\text{Log}[a+b x]\right) \text{PolyLog}\left[3,-\frac{b x}{a}\right]+$$
$$24 \text{Log}\left[-\frac{b x}{a+b x}\right] \text{PolyLog}\left[3,\frac{b x}{a+b x}\right]+24 \left(-\text{Log}[x]+\text{Log}\left[-\frac{b x}{a+b x}\right]\right) \text{PolyLog}\left[3,1+\frac{b x}{a}\right]-$$
$$\left.24 \left(\text{PolyLog}\left[4,-\frac{b x}{a}\right]+\text{PolyLog}\left[4,\frac{b x}{a+b x}\right]-\text{PolyLog}\left[4,1+\frac{b x}{a}\right]\right)\right)$$

Result (type 8, 40 leaves, 1 step):

$$\frac{1}{2} \text{Log}[x]^2 \text{Log}[a+b x]^2-b \,\text{Unintegrable}\left[\frac{\text{Log}[x]^2 \text{Log}[a+b x]}{a+b x},x\right]$$

Problem 379: Result valid but suboptimal antiderivative.

$$\int x^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \left(f+g \text{Log}\left[c (d+e x)^n\right]\right) dx$$

Optimal (type 3, 258 leaves, 7 steps):

$$\frac{2 b d^2 g n^2 x}{e^2}-\frac{b d g n^2 (d+e x)^2}{2 e^3}+\frac{2 b g n^2 (d+e x)^3}{27 e^3}-$$
$$\frac{b d^3 g n^2 \text{Log}[d+e x]^2}{3 e^3}+\frac{1}{3} x^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \left(f+g \text{Log}\left[c (d+e x)^n\right]\right)-$$
$$\frac{d^2 n (d+e x) \left(b f+a g+2 b g \text{Log}\left[c (d+e x)^n\right]\right)}{e^3}+\frac{d n (d+e x)^2 \left(b f+a g+2 b g \text{Log}\left[c (d+e x)^n\right]\right)}{2 e^3}-$$
$$\frac{n (d+e x)^3 \left(b f+a g+2 b g \text{Log}\left[c (d+e x)^n\right]\right)}{9 e^3}+\frac{d^3 n \text{Log}[d+e x] \left(b f+a g+2 b g \text{Log}\left[c (d+e x)^n\right]\right)}{3 e^3}$$

Result (type 3, 258 leaves, 13 steps):

$$\frac{2\,b\,d^2\,g\,n^2\,x}{e^2}-\frac{b\,d\,g\,n^2\,(d+e\,x)^2}{2\,e^3}+\frac{2\,b\,g\,n^2\,(d+e\,x)^3}{27\,e^3}-\frac{b\,d^3\,g\,n^2\,\mathrm{Log}[d+e\,x]^2}{3\,e^3}-$$
$$\frac{1}{18}\,g\,n\left(\frac{18\,d^2\,(d+e\,x)}{e^3}-\frac{9\,d\,(d+e\,x)^2}{e^3}+\frac{2\,(d+e\,x)^3}{e^3}-\frac{6\,d^3\,\mathrm{Log}[d+e\,x]}{e^3}\right)\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)-$$
$$\frac{1}{18}\,b\,n\left(\frac{18\,d^2\,(d+e\,x)}{e^3}-\frac{9\,d\,(d+e\,x)^2}{e^3}+\frac{2\,(d+e\,x)^3}{e^3}-\frac{6\,d^3\,\mathrm{Log}[d+e\,x]}{e^3}\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)+$$
$$\frac{1}{3}\,x^3\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)$$

Problem 380: Result valid but suboptimal antiderivative.

$$\int x\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\,dx$$

Optimal (type 3, 196 leaves, 7 steps):

$$-\frac{2\,b\,d\,g\,n^2\,x}{e}+\frac{b\,g\,n^2\,(d+e\,x)^2}{4\,e^2}+\frac{b\,d^2\,g\,n^2\,\mathrm{Log}[d+e\,x]^2}{2\,e^2}+$$
$$\frac{1}{2}\,x^2\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)+$$
$$\frac{d\,n\,(d+e\,x)\left(b\,f+a\,g+2\,b\,g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{e^2}-\frac{n\,(d+e\,x)^2\left(b\,f+a\,g+2\,b\,g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{4\,e^2}-$$
$$\frac{d^2\,n\,\mathrm{Log}[d+e\,x]\left(b\,f+a\,g+2\,b\,g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,e^2}$$

Result (type 3, 206 leaves, 13 steps):

$$-\frac{2\,b\,d\,g\,n^2\,x}{e}+\frac{b\,g\,n^2\,(d+e\,x)^2}{4\,e^2}+\frac{b\,d^2\,g\,n^2\,\mathrm{Log}[d+e\,x]^2}{2\,e^2}+$$
$$\frac{1}{4}\,g\,n\left(\frac{4\,d\,(d+e\,x)}{e^2}-\frac{(d+e\,x)^2}{e^2}-\frac{2\,d^2\,\mathrm{Log}[d+e\,x]}{e^2}\right)\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)+$$
$$\frac{1}{4}\,b\,n\left(\frac{4\,d\,(d+e\,x)}{e^2}-\frac{(d+e\,x)^2}{e^2}-\frac{2\,d^2\,\mathrm{Log}[d+e\,x]}{e^2}\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)+$$
$$\frac{1}{2}\,x^2\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)$$

Problem 381: Result valid but suboptimal antiderivative.

$$\int\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\,dx$$

Optimal (type 3, 110 leaves, 6 steps):

$$-(b f + a g) n x + 2 b g n^2 x - \frac{2 b g n (d + e x) \text{Log}[c (d + e x)^n]}{e} +$$
$$x (a + b \text{Log}[c (d + e x)^n]) (f + g \text{Log}[c (d + e x)^n]) + \frac{d (b f + a g + 2 b g \text{Log}[c (d + e x)^n])^2}{4 b e g}$$

Result (type 3, 130 leaves, 11 steps):

$$-b f n x - a g n x + 2 b g n^2 x - \frac{2 b g n (d + e x) \text{Log}[c (d + e x)^n]}{e} + \frac{d g (a + b \text{Log}[c (d + e x)^n])^2}{2 b e} +$$
$$x (a + b \text{Log}[c (d + e x)^n]) (f + g \text{Log}[c (d + e x)^n]) + \frac{b d (f + g \text{Log}[c (d + e x)^n])^2}{2 e g}$$

Problem 382: Result valid but suboptimal antiderivative.

$$\int \frac{(a + b \text{Log}[c (d + e x)^n]) (f + g \text{Log}[c (d + e x)^n])}{x} \, dx$$

Optimal (type 4, 158 leaves, 6 steps):

$$\text{Log}[x] (a + b \text{Log}[c (d + e x)^n]) (f + g \text{Log}[c (d + e x)^n]) -$$
$$\frac{\text{Log}[x] (b f + a g + 2 b g \text{Log}[c (d + e x)^n])^2}{4 b g} + \frac{\text{Log}[-\frac{e x}{d}] (b f + a g + 2 b g \text{Log}[c (d + e x)^n])^2}{4 b g} +$$
$$n (b f + a g + 2 b g \text{Log}[c (d + e x)^n]) \text{PolyLog}[2, 1 + \frac{e x}{d}] - 2 b g n^2 \text{PolyLog}[3, 1 + \frac{e x}{d}]$$

Result (type 4, 219 leaves, 11 steps):

$$-\frac{g \text{Log}[x] (a + b \text{Log}[c (d + e x)^n])^2}{2 b} + \frac{g \text{Log}[-\frac{e x}{d}] (a + b \text{Log}[c (d + e x)^n])^2}{2 b} +$$
$$\text{Log}[x] (a + b \text{Log}[c (d + e x)^n]) (f + g \text{Log}[c (d + e x)^n]) - \frac{b \text{Log}[x] (f + g \text{Log}[c (d + e x)^n])^2}{2 g} +$$
$$\frac{b \text{Log}[-\frac{e x}{d}] (f + g \text{Log}[c (d + e x)^n])^2}{2 g} + g n (a + b \text{Log}[c (d + e x)^n]) \text{PolyLog}[2, 1 + \frac{e x}{d}] +$$
$$b n (f + g \text{Log}[c (d + e x)^n]) \text{PolyLog}[2, 1 + \frac{e x}{d}] - 2 b g n^2 \text{PolyLog}[3, 1 + \frac{e x}{d}]$$

Problem 383: Result valid but suboptimal antiderivative.

$$\int \frac{(a + b \text{Log}[c (d + e x)^n]) (f + g \text{Log}[c (d + e x)^n])}{x^2} \, dx$$

Optimal (type 4, 96 leaves, 4 steps):

$$-\frac{(a + b \text{Log}[c (d + e x)^n]) (f + g \text{Log}[c (d + e x)^n])}{x} +$$
$$\frac{e n (b f + a g + 2 b g \text{Log}[c (d + e x)^n]) \text{Log}[1 - \frac{d}{d+e x}]}{d} - \frac{2 b e g n^2 \text{PolyLog}[2, \frac{d}{d+e x}]}{d}$$

Result (type 4, 169 leaves, 11 steps):

$$\frac{e\,g\,n\,\mathrm{Log}\left[-\frac{e\,x}{d}\right]\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{d}-\frac{e\,g\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2\,b\,d}+\frac{b\,e\,n\,\mathrm{Log}\left[-\frac{e\,x}{d}\right]\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{d}-\frac{\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{x}-\frac{b\,e\,\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2\,d\,g}+\frac{2\,b\,e\,g\,n^2\,\mathrm{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{d}$$

Problem 384: Result valid but suboptimal antiderivative.

$$\int\frac{\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{x^3}\,dx$$

Optimal (type 4, 156 leaves, 7 steps):

$$\frac{b\,e^2\,g\,n^2\,\mathrm{Log}[x]}{d^2}-\frac{\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,x^2}-\frac{e\,n\,(d+e\,x)\left(b\,f+a\,g+2\,b\,g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,d^2\,x}-\frac{e^2\,n\left(b\,f+a\,g+2\,b\,g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\mathrm{Log}\left[1-\frac{d}{d+e\,x}\right]}{2\,d^2}+\frac{b\,e^2\,g\,n^2\,\mathrm{PolyLog}\left[2,\frac{d}{d+e\,x}\right]}{d^2}$$

Result (type 4, 265 leaves, 17 steps):

$$\frac{b\,e^2\,g\,n^2\,\mathrm{Log}[x]}{d^2}-\frac{e\,g\,n\,(d+e\,x)\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,d^2\,x}-\frac{e^2\,g\,n\,\mathrm{Log}\left[-\frac{e\,x}{d}\right]\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,d^2}+\frac{e^2\,g\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{4\,b\,d^2}-\frac{b\,e\,n\,(d+e\,x)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,d^2\,x}-\frac{b\,e^2\,n\,\mathrm{Log}\left[-\frac{e\,x}{d}\right]\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,d^2}-\frac{\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,x^2}+\frac{b\,e^2\,\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{4\,d^2\,g}-\frac{b\,e^2\,g\,n^2\,\mathrm{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{d^2}$$

Problem 385: Result valid but suboptimal antiderivative.

$$\int\frac{\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\left(f+g\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{x^4}\,dx$$

Optimal (type 4, 234 leaves, 11 steps):

$$-\frac{b e^2 g n^2}{3 d^2 x}-\frac{b e^3 g n^2 \text{Log}[x]}{d^3}+\frac{b e^3 g n^2 \text{Log}[d+e x]}{3 d^3}-\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \left(f+g \text{Log}\left[c (d+e x)^n\right]\right)}{3 x^3}-\frac{e n \left(b f+a g+2 b g \text{Log}\left[c (d+e x)^n\right]\right)}{6 d x^2}+\frac{e^2 n (d+e x) \left(b f+a g+2 b g \text{Log}\left[c (d+e x)^n\right]\right)}{3 d^3 x}+\frac{e^3 n \left(b f+a g+2 b g \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[1-\frac{d}{d+e x}\right]}{3 d^3}-\frac{2 b e^3 g n^2 \text{PolyLog}\left[2,\frac{d}{d+e x}\right]}{3 d^3}$$

Result (type 4, 365 leaves, 25 steps):

$$-\frac{b e^2 g n^2}{3 d^2 x}-\frac{b e^3 g n^2 \text{Log}[x]}{d^3}+\frac{b e^3 g n^2 \text{Log}[d+e x]}{3 d^3}-\frac{e g n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{6 d x^2}+\frac{e^2 g n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{3 d^3 x}+\frac{e^3 g n \text{Log}\left[-\frac{e x}{d}\right] \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{3 d^3}-\frac{e^3 g \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{6 b d^3}-\frac{b e n \left(f+g \text{Log}\left[c (d+e x)^n\right]\right)}{6 d x^2}+\frac{b e^2 n (d+e x) \left(f+g \text{Log}\left[c (d+e x)^n\right]\right)}{3 d^3 x}+\frac{b e^3 n \text{Log}\left[-\frac{e x}{d}\right] \left(f+g \text{Log}\left[c (d+e x)^n\right]\right)}{3 d^3}-\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \left(f+g \text{Log}\left[c (d+e x)^n\right]\right)}{3 x^3}-\frac{b e^3 \left(f+g \text{Log}\left[c (d+e x)^n\right]\right)^2}{6 d^3 g}+\frac{2 b e^3 g n^2 \text{PolyLog}\left[2,1+\frac{e x}{d}\right]}{3 d^3}$$

Problem 428: Result valid but suboptimal antiderivative.

$$\int (g+h x)^3 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \, dx$$

Optimal (type 3, 409 leaves, 9 steps):

$$\frac{2 b^2 (f g-e h)^3 p^2 q^2 x}{f^3}+\frac{3 b^2 h (f g-e h)^2 p^2 q^2 (e+f x)^2}{4 f^4}+$$
$$\frac{2 b^2 h^2 (f g-e h) p^2 q^2 (e+f x)^3}{9 f^4}+\frac{b^2 h^3 p^2 q^2 (e+f x)^4}{32 f^4}+\frac{b^2 (f g-e h)^4 p^2 q^2 \text{Log}[e+f x]^2}{4 f^4 h}-$$
$$\frac{2 b (f g-e h)^3 p q (e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{f^4}-$$
$$\frac{3 b h (f g-e h)^2 p q (e+f x)^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{2 f^4}-$$
$$\frac{2 b h^2 (f g-e h) p q (e+f x)^3 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{3 f^4}-$$
$$\frac{b h^3 p q (e+f x)^4 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{8 f^4}-$$
$$\frac{b (f g-e h)^4 p q \text{Log}[e+f x] \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{2 f^4 h}+$$
$$\frac{(g+h x)^4 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{4 h}$$

Result (type 3, 325 leaves, 7 steps):

$$\frac{2 b^2 (f g-e h)^3 p^2 q^2 x}{f^3}+\frac{3 b^2 h (f g-e h)^2 p^2 q^2 (e+f x)^2}{4 f^4}+$$
$$\frac{2 b^2 h^2 (f g-e h) p^2 q^2 (e+f x)^3}{9 f^4}+\frac{b^2 h^3 p^2 q^2 (e+f x)^4}{32 f^4}+\frac{b^2 (f g-e h)^4 p^2 q^2 \text{Log}[e+f x]^2}{4 f^4 h}-$$
$$\frac{1}{24 h} b p q \left(\frac{48 h (f g-e h)^3 (e+f x)}{f^4}+\frac{36 h^2 (f g-e h)^2 (e+f x)^2}{f^4}+\right.$$
$$\left.\frac{16 h^3 (f g-e h) (e+f x)^3}{f^4}+\frac{3 h^4 (e+f x)^4}{f^4}+\frac{12 (f g-e h)^4 \text{Log}[e+f x]}{f^4}\right)$$
$$\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)+\frac{(g+h x)^4 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{4 h}$$

Problem 429: Result valid but suboptimal antiderivative.

$$\int (g+h x)^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \, dx$$

Optimal (type 3, 323 leaves, 9 steps):

$$\frac{2\,b^2\,(f\,g-e\,h)^2\,p^2\,q^2\,x}{f^2}+\frac{b^2\,h\,(f\,g-e\,h)\,p^2\,q^2\,(e+f\,x)^2}{2\,f^3}+\frac{2\,b^2\,h^2\,p^2\,q^2\,(e+f\,x)^3}{27\,f^3}+\frac{b^2\,(f\,g-e\,h)^3\,p^2\,q^2\,\mathrm{Log}[e+f\,x]^2}{3\,f^3\,h}-\frac{2\,b\,(f\,g-e\,h)^2\,p\,q\,(e+f\,x)\,\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{f^3}-\frac{b\,h\,(f\,g-e\,h)\,p\,q\,(e+f\,x)^2\,\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{f^3}-\frac{2\,b\,h^2\,p\,q\,(e+f\,x)^3\,\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{9\,f^3}-\frac{2\,b\,(f\,g-e\,h)^3\,p\,q\,\mathrm{Log}[e+f\,x]\,\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{3\,f^3\,h}+\frac{(g+h\,x)^3\,\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{3\,h}$$

Result (type 3, 264 leaves, 9 steps):

$$\frac{2\,b^2\,(f\,g-e\,h)^2\,p^2\,q^2\,x}{f^2}+\frac{b^2\,h\,(f\,g-e\,h)\,p^2\,q^2\,(e+f\,x)^2}{2\,f^3}+\frac{2\,b^2\,h^2\,p^2\,q^2\,(e+f\,x)^3}{27\,f^3}+\frac{b^2\,(f\,g-e\,h)^3\,p^2\,q^2\,\mathrm{Log}[e+f\,x]^2}{3\,f^3\,h}-\frac{1}{9\,h}b\,p\,q\left(\frac{18\,h\,(f\,g-e\,h)^2\,(e+f\,x)}{f^3}+\frac{9\,h^2\,(f\,g-e\,h)\,(e+f\,x)^2}{f^3}+\frac{2\,h^3\,(e+f\,x)^3}{f^3}+\frac{6\,(f\,g-e\,h)^3\,\mathrm{Log}[e+f\,x]}{f^3}\right)\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)+\frac{(g+h\,x)^3\,\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{3\,h}$$

Problem 434: Result valid but suboptimal antiderivative.

$$\int\frac{\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{(g+h\,x)^3}\,dx$$

Optimal (type 4, 222 leaves, 8 steps):

$$-\frac{b\,f\,p\,q\,(e+f\,x)\,\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{(f\,g-e\,h)^2\,(g+h\,x)}-\frac{\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{2\,h\,(g+h\,x)^2}+\frac{b^2\,f^2\,p^2\,q^2\,\mathrm{Log}[g+h\,x]}{h\,(f\,g-e\,h)^2}-\frac{b\,f^2\,p\,q\,\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)\,\mathrm{Log}\left[1+\frac{f\,g-e\,h}{h\,(e+f\,x)}\right]}{h\,(f\,g-e\,h)^2}+\frac{b^2\,f^2\,p^2\,q^2\,\mathrm{PolyLog}\left[2,-\frac{f\,g-e\,h}{h\,(e+f\,x)}\right]}{h\,(f\,g-e\,h)^2}$$

Result (type 4, 257 leaves, 10 steps):

$$-\frac{b f p q (e+f x) \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{(f g-e h)^2 (g+h x)}+\frac{f^2 \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{2 h (f g-e h)^2}-\frac{\left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{2 h (g+h x)^2}+\frac{b^2 f^2 p^2 q^2 \operatorname{Log}[g+h x]}{h (f g-e h)^2}-\frac{b f^2 p q \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{h (f g-e h)^2}-\frac{b^2 f^2 p^2 q^2 \operatorname{PolyLog}\left[2,-\frac{h (e+f x)}{f g-e h}\right]}{h (f g-e h)^2}$$

Problem 440: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{(g+h x)^3} \, dx$$

Optimal (type 4, 376 leaves, 10 steps):

$$-\frac{3 b f p q (e+f x) \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{2 (f g-e h)^2 (g+h x)}-\frac{\left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{2 h (g+h x)^2}+\frac{3 b^2 f^2 p^2 q^2 \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{h (f g-e h)^2}-\frac{3 b f^2 p q \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \operatorname{Log}\left[1+\frac{f g-e h}{h (e+f x)}\right]}{2 h (f g-e h)^2}+\frac{3 b^2 f^2 p^2 q^2 \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \operatorname{PolyLog}\left[2,-\frac{f g-e h}{h (e+f x)}\right]}{h (f g-e h)^2}+\frac{3 b^3 f^2 p^3 q^3 \operatorname{PolyLog}\left[2,-\frac{h (e+f x)}{f g-e h}\right]}{h (f g-e h)^2}+\frac{3 b^3 f^2 p^3 q^3 \operatorname{PolyLog}\left[3,-\frac{f g-e h}{h (e+f x)}\right]}{h (f g-e h)^2}$$

Result (type 4, 408 leaves, 13 steps):

$$-\frac{3 b f p q (e+f x) \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{2 (f g-e h)^2 (g+h x)}+\frac{f^2 \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{2 h (f g-e h)^2}-\frac{\left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{2 h (g+h x)^2}+\frac{3 b^2 f^2 p^2 q^2 \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{h (f g-e h)^2}-\frac{3 b f^2 p q \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{2 h (f g-e h)^2}+\frac{3 b^3 f^2 p^3 q^3 \operatorname{PolyLog}\left[2,-\frac{h (e+f x)}{f g-e h}\right]}{h (f g-e h)^2}-\frac{3 b^2 f^2 p^2 q^2 \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \operatorname{PolyLog}\left[2,-\frac{h (e+f x)}{f g-e h}\right]}{h (f g-e h)^2}+\frac{3 b^3 f^2 p^3 q^3 \operatorname{PolyLog}\left[3,-\frac{h (e+f x)}{f g-e h}\right]}{h (f g-e h)^2}$$

Test results for the 641 problems in "3.4 u (a+b log(c (d+e x^m)^n))^p.m"

Problem 77: Result valid but suboptimal antiderivative.

$$\int x^5 \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]^2 dx$$

Optimal (type 3, 215 leaves, 8 steps):

$$\frac{a^2 p^2 x^2}{b^2}-\frac{a p^2 \left(a+b x^2\right)^2}{4 b^3}+\frac{p^2 \left(a+b x^2\right)^3}{27 b^3}-\frac{a^3 p^2 \operatorname{Log}\left[a+b x^2\right]^2}{6 b^3}-\frac{a^2 p \left(a+b x^2\right) \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]}{b^3}+\frac{a p \left(a+b x^2\right)^2 \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]}{2 b^3}-\frac{p \left(a+b x^2\right)^3 \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]}{9 b^3}+\frac{a^3 p \operatorname{Log}\left[a+b x^2\right] \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]}{3 b^3}+\frac{1}{6} x^6 \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]^2$$

Result (type 3, 175 leaves, 8 steps):

$$\frac{a^2 p^2 x^2}{b^2}-\frac{a p^2 \left(a+b x^2\right)^2}{4 b^3}+\frac{p^2 \left(a+b x^2\right)^3}{27 b^3}-\frac{a^3 p^2 \operatorname{Log}\left[a+b x^2\right]^2}{6 b^3}-\frac{1}{18} p \left(\frac{18 a^2 \left(a+b x^2\right)}{b^3}-\frac{9 a \left(a+b x^2\right)^2}{b^3}+\frac{2 \left(a+b x^2\right)^3}{b^3}-\frac{6 a^3 \operatorname{Log}\left[a+b x^2\right]}{b^3}\right) \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]+\frac{1}{6} x^6 \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]^2$$

Problem 82: Result valid but suboptimal antiderivative.

$$\int \frac{\operatorname{Log}\left[c\left(a+b x^2\right)^p\right]^2}{x^5} dx$$

Optimal (type 4, 129 leaves, 8 steps):

$$\frac{b^2 p^2 \operatorname{Log}[x]}{a^2}-\frac{b p \left(a+b x^2\right) \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]}{2 a^2 x^2}-\frac{\operatorname{Log}\left[c\left(a+b x^2\right)^p\right]^2}{4 x^4}-\frac{b^2 p \operatorname{Log}\left[c\left(a+b x^2\right)^p\right] \operatorname{Log}\left[1-\frac{a}{a+b x^2}\right]}{2 a^2}+\frac{b^2 p^2 \operatorname{PolyLog}\left[2,\frac{a}{a+b x^2}\right]}{2 a^2}$$

Result (type 4, 147 leaves, 10 steps):

$$\frac{b^2 p^2 \operatorname{Log}[x]}{a^2}-\frac{b p \left(a+b x^2\right) \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]}{2 a^2 x^2}-\frac{b^2 p \operatorname{Log}\left[-\frac{b x^2}{a}\right] \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]}{2 a^2}+\frac{b^2 \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]^2}{4 a^2}-\frac{\operatorname{Log}\left[c\left(a+b x^2\right)^p\right]^2}{4 x^4}-\frac{b^2 p^2 \operatorname{PolyLog}\left[2,1+\frac{b x^2}{a}\right]}{2 a^2}$$

Problem 83: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Log}\left[c\left(a+b x^2\right)^p\right]^2}{x^7}\, dx$$

Optimal (type 4, 193 leaves, 12 steps):

$$-\frac{b^2 p^2}{6 a^2 x^2}-\frac{b^3 p^2 \text{Log}[x]}{a^3}+\frac{b^3 p^2 \text{Log}\left[a+b x^2\right]}{6 a^3}-\frac{b p \text{Log}\left[c\left(a+b x^2\right)^p\right]}{6 a x^4}+\frac{b^2 p\left(a+b x^2\right) \text{Log}\left[c\left(a+b x^2\right)^p\right]}{3 a^3 x^2}-\frac{\text{Log}\left[c\left(a+b x^2\right)^p\right]^2}{6 x^6}+\frac{b^3 p \text{Log}\left[c\left(a+b x^2\right)^p\right] \text{Log}\left[1-\frac{a}{a+b x^2}\right]}{3 a^3}-\frac{b^3 p^2 \text{PolyLog}\left[2,\frac{a}{a+b x^2}\right]}{3 a^3}$$

Result (type 4, 211 leaves, 14 steps):

$$-\frac{b^2 p^2}{6 a^2 x^2}-\frac{b^3 p^2 \text{Log}[x]}{a^3}+\frac{b^3 p^2 \text{Log}\left[a+b x^2\right]}{6 a^3}-\frac{b p \text{Log}\left[c\left(a+b x^2\right)^p\right]}{6 a x^4}+\frac{b^2 p\left(a+b x^2\right) \text{Log}\left[c\left(a+b x^2\right)^p\right]}{3 a^3 x^2}+\frac{b^3 p \text{Log}\left[-\frac{b x^2}{a}\right] \text{Log}\left[c\left(a+b x^2\right)^p\right]}{3 a^3}-\frac{b^3 \text{Log}\left[c\left(a+b x^2\right)^p\right]^2}{6 a^3}-\frac{\text{Log}\left[c\left(a+b x^2\right)^p\right]^2}{6 x^6}+\frac{b^3 p^2 \text{PolyLog}\left[2,1+\frac{b x^2}{a}\right]}{3 a^3}$$

Problem 96: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Log}\left[c\left(a+b x^2\right)^p\right]^3}{x^5}\, dx$$

Optimal (type 4, 219 leaves, 10 steps):

$$\frac{3 b^2 p^2 \text{Log}\left[-\frac{b x^2}{a}\right] \text{Log}\left[c\left(a+b x^2\right)^p\right]}{2 a^2}-\frac{3 b p\left(a+b x^2\right) \text{Log}\left[c\left(a+b x^2\right)^p\right]^2}{4 a^2 x^2}-\frac{\text{Log}\left[c\left(a+b x^2\right)^p\right]^3}{4 x^4}-\frac{3 b^2 p \text{Log}\left[c\left(a+b x^2\right)^p\right]^2 \text{Log}\left[1-\frac{a}{a+b x^2}\right]}{4 a^2}+\frac{3 b^2 p^2 \text{Log}\left[c\left(a+b x^2\right)^p\right] \text{PolyLog}\left[2,\frac{a}{a+b x^2}\right]}{2 a^2}+\frac{3 b^2 p^3 \text{PolyLog}\left[2,1+\frac{b x^2}{a}\right]}{2 a^2}+\frac{3 b^2 p^3 \text{PolyLog}\left[3,\frac{a}{a+b x^2}\right]}{2 a^2}$$

Result (type 4, 236 leaves, 13 steps):

$$\frac{3 b^2 p^2 \operatorname{Log}\left[-\frac{b x^2}{a}\right] \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]}{2 a^2}-\frac{3 b p \left(a+b x^2\right) \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^2}{4 a^2 x^2}-\frac{3 b^2 p \operatorname{Log}\left[-\frac{b x^2}{a}\right] \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^2}{4 a^2}+\frac{b^2 \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^3}{4 a^2}-\frac{\operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^3}{4 x^4}+\frac{3 b^2 p^3 \operatorname{PolyLog}\left[2,1+\frac{b x^2}{a}\right]}{2 a^2}-\frac{3 b^2 p^2 \operatorname{Log}\left[c \left(a+b x^2\right)^p\right] \operatorname{PolyLog}\left[2,1+\frac{b x^2}{a}\right]}{2 a^2}+\frac{3 b^2 p^3 \operatorname{PolyLog}\left[3,1+\frac{b x^2}{a}\right]}{2 a^2}$$

Problem 97: Result valid but suboptimal antiderivative.

$$\int \frac{\operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^3}{x^7} \, dx$$

Optimal (type 4, 352 leaves, 17 steps):

$$\frac{b^3 p^3 \operatorname{Log}[x]}{a^3}-\frac{b^2 p^2 \left(a+b x^2\right) \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]}{2 a^3 x^2}-\frac{b^3 p^2 \operatorname{Log}\left[-\frac{b x^2}{a}\right] \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]}{a^3}-\frac{b p \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^2}{4 a x^4}+\frac{b^2 p \left(a+b x^2\right) \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^2}{2 a^3 x^2}-\frac{\operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^3}{6 x^6}-\frac{b^3 p^2 \operatorname{Log}\left[c \left(a+b x^2\right)^p\right] \operatorname{Log}\left[1-\frac{a}{a+b x^2}\right]}{2 a^3}+\frac{b^3 p \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^2 \operatorname{Log}\left[1-\frac{a}{a+b x^2}\right]}{2 a^3}+\frac{b^3 p^3 \operatorname{PolyLog}\left[2,\frac{a}{a+b x^2}\right]}{2 a^3}-\frac{b^3 p^2 \operatorname{Log}\left[c \left(a+b x^2\right)^p\right] \operatorname{PolyLog}\left[2,\frac{a}{a+b x^2}\right]}{a^3}-\frac{b^3 p^3 \operatorname{PolyLog}\left[2,1+\frac{b x^2}{a}\right]}{a^3}-\frac{b^3 p^3 \operatorname{PolyLog}\left[3,\frac{a}{a+b x^2}\right]}{a^3}$$

Result (type 4, 331 leaves, 22 steps):

$$\frac{b^3 p^3 \operatorname{Log}[x]}{a^3}-\frac{b^2 p^2 \left(a+b x^2\right) \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]}{2 a^3 x^2}-\frac{3 b^3 p^2 \operatorname{Log}\left[-\frac{b x^2}{a}\right] \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]}{2 a^3}+\frac{b^3 p \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^2}{4 a^3}-\frac{b p \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^2}{4 a x^4}+\frac{b^2 p \left(a+b x^2\right) \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^2}{2 a^3 x^2}+\frac{b^3 p \operatorname{Log}\left[-\frac{b x^2}{a}\right] \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^2}{2 a^3}-\frac{b^3 \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^3}{6 a^3}-\frac{\operatorname{Log}\left[c \left(a+b x^2\right)^p\right]^3}{6 x^6}-\frac{3 b^3 p^3 \operatorname{PolyLog}\left[2,1+\frac{b x^2}{a}\right]}{2 a^3}+\frac{b^3 p^2 \operatorname{Log}\left[c \left(a+b x^2\right)^p\right] \operatorname{PolyLog}\left[2,1+\frac{b x^2}{a}\right]}{a^3}-\frac{b^3 p^3 \operatorname{PolyLog}\left[3,1+\frac{b x^2}{a}\right]}{a^3}$$

Problem 163: Result valid but suboptimal antiderivative.

$$\int (f x)^{-1+3 n} \operatorname{Log}\left[c \left(d+e x^n\right)^p\right]^2 \, dx$$

Optimal (type 3, 372 leaves, 9 steps):

$$\frac{2 d^2 p^2 x^{1-2 n} (f x)^{-1+3 n}}{e^2 n}-\frac{d p^2 x^{1-3 n} (f x)^{-1+3 n} \left(d+e x^n\right)^2}{2 e^3 n}+\frac{2 p^2 x^{1-3 n} (f x)^{-1+3 n} \left(d+e x^n\right)^3}{27 e^3 n}-\frac{d^3 p^2 x^{1-3 n} (f x)^{-1+3 n} \operatorname{Log}\left[d+e x^n\right]^2}{3 e^3 n}-\frac{2 d^2 p x^{1-3 n} (f x)^{-1+3 n} \left(d+e x^n\right) \operatorname{Log}\left[c \left(d+e x^n\right)^p\right]}{e^3 n}+\frac{d p x^{1-3 n} (f x)^{-1+3 n} \left(d+e x^n\right)^2 \operatorname{Log}\left[c \left(d+e x^n\right)^p\right]}{e^3 n}-\frac{2 p x^{1-3 n} (f x)^{-1+3 n} \left(d+e x^n\right)^3 \operatorname{Log}\left[c \left(d+e x^n\right)^p\right]}{9 e^3 n}+\frac{2 d^3 p x^{1-3 n} (f x)^{-1+3 n} \operatorname{Log}\left[d+e x^n\right] \operatorname{Log}\left[c \left(d+e x^n\right)^p\right]}{3 e^3 n}+\frac{x (f x)^{-1+3 n} \operatorname{Log}\left[c \left(d+e x^n\right)^p\right]^2}{3 n}$$

Result (type 3, 278 leaves, 9 steps):

$$\frac{2 d^2 p^2 x^{1-2 n} (f x)^{-1+3 n}}{e^2 n}-\frac{d p^2 x^{1-3 n} (f x)^{-1+3 n} \left(d+e x^n\right)^2}{2 e^3 n}+\frac{2 p^2 x^{1-3 n} (f x)^{-1+3 n} \left(d+e x^n\right)^3}{27 e^3 n}-\frac{d^3 p^2 x^{1-3 n} (f x)^{-1+3 n} \operatorname{Log}\left[d+e x^n\right]^2}{3 e^3 n}-\frac{1}{9 n} p x^{1-3 n} (f x)^{-1+3 n} \left(\frac{18 d^2 \left(d+e x^n\right)}{e^3}-\frac{9 d \left(d+e x^n\right)^2}{e^3}+\frac{2 \left(d+e x^n\right)^3}{e^3}-\frac{6 d^3 \operatorname{Log}\left[d+e x^n\right]}{e^3}\right) \operatorname{Log}\left[c \left(d+e x^n\right)^p\right]+\frac{x (f x)^{-1+3 n} \operatorname{Log}\left[c \left(d+e x^n\right)^p\right]^2}{3 n}$$

Problem 168: Result valid but suboptimal antiderivative.

$$\int (f x)^{-1-2 n} \operatorname{Log}\left[c \left(d+e x^n\right)^p\right]^2 \, dx$$

Optimal (type 4, 200 leaves, 9 steps):

$$\frac{e^2 p^2 x^{1+2 n} (f x)^{-1-2 n} \operatorname{Log}[x]}{d^2}-\frac{e p x^{1+n} (f x)^{-1-2 n} \left(d+e x^n\right) \operatorname{Log}\left[c \left(d+e x^n\right)^p\right]}{d^2 n}-\frac{x (f x)^{-1-2 n} \operatorname{Log}\left[c \left(d+e x^n\right)^p\right]^2}{2 n}-\frac{e^2 p x^{1+2 n} (f x)^{-1-2 n} \operatorname{Log}\left[c \left(d+e x^n\right)^p\right] \operatorname{Log}\left[1-\frac{d}{d+e x^n}\right]}{d^2 n}+\frac{e^2 p^2 x^{1+2 n} (f x)^{-1-2 n} \operatorname{PolyLog}\left[2,\frac{d}{d+e x^n}\right]}{d^2 n}$$

Result (type 4, 238 leaves, 11 steps):

$$\frac{e^2 p^2 x^{1+2n} (f x)^{-1-2n} \text{Log}[x]}{d^2} - \frac{e p x^{1+n} (f x)^{-1-2n} (d+e x^n) \text{Log}[c (d+e x^n)^p]}{d^2 n} - \frac{e^2 p x^{1+2n} (f x)^{-1-2n} \text{Log}\left[-\frac{e x^n}{d}\right] \text{Log}[c (d+e x^n)^p]}{d^2 n} - \frac{x (f x)^{-1-2n} \text{Log}[c (d+e x^n)^p]^2}{2 n} + \frac{e^2 x^{1+2n} (f x)^{-1-2n} \text{Log}[c (d+e x^n)^p]^2}{2 d^2 n} - \frac{e^2 p^2 x^{1+2n} (f x)^{-1-2n} \text{PolyLog}\left[2, 1+\frac{e x^n}{d}\right]}{d^2 n}$$

Problem 408: Result valid but suboptimal antiderivative.

$$\int x^2 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2 dx$$

Optimal (type 3, 480 leaves, 8 steps):

$$\frac{5 b^2 d^4 n^2 \left(d+e \sqrt{x}\right)^2}{2 e^6} - \frac{40 b^2 d^3 n^2 \left(d+e \sqrt{x}\right)^3}{27 e^6} + \frac{5 b^2 d^2 n^2 \left(d+e \sqrt{x}\right)^4}{8 e^6} - \frac{4 b^2 d n^2 \left(d+e \sqrt{x}\right)^5}{25 e^6} + \frac{b^2 n^2 \left(d+e \sqrt{x}\right)^6}{54 e^6} - \frac{4 b^2 d^5 n^2 \sqrt{x}}{e^5} + \frac{b^2 d^6 n^2 \text{Log}\left[d+e \sqrt{x}\right]^2}{3 e^6} + \frac{4 b d^5 n \left(d+e \sqrt{x}\right) \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{e^6} - \frac{5 b d^4 n \left(d+e \sqrt{x}\right)^2 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{e^6} + \frac{40 b d^3 n \left(d+e \sqrt{x}\right)^3 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{9 e^6} - \frac{5 b d^2 n \left(d+e \sqrt{x}\right)^4 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{2 e^6} + \frac{4 b d n \left(d+e \sqrt{x}\right)^5 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{5 e^6} - \frac{b n \left(d+e \sqrt{x}\right)^6 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{9 e^6} - \frac{2 b d^6 n \text{Log}\left[d+e \sqrt{x}\right] \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{3 e^6} + \frac{1}{3} x^3 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2$$

Result (type 3, 355 leaves, 8 steps):

$$\frac{5 b^2 d^4 n^2 \left(d+e \sqrt{x}\right)^2}{2 e^6} - \frac{40 b^2 d^3 n^2 \left(d+e \sqrt{x}\right)^3}{27 e^6} + \frac{5 b^2 d^2 n^2 \left(d+e \sqrt{x}\right)^4}{8 e^6} - \frac{4 b^2 d n^2 \left(d+e \sqrt{x}\right)^5}{25 e^6} + \frac{b^2 n^2 \left(d+e \sqrt{x}\right)^6}{54 e^6} - \frac{4 b^2 d^5 n^2 \sqrt{x}}{e^5} + \frac{b^2 d^6 n^2 \text{Log}\left[d+e \sqrt{x}\right]^2}{3 e^6} + \frac{1}{90} b n \left(\frac{360 d^5 \left(d+e \sqrt{x}\right)}{e^6} - \frac{450 d^4 \left(d+e \sqrt{x}\right)^2}{e^6} + \frac{400 d^3 \left(d+e \sqrt{x}\right)^3}{e^6} - \frac{225 d^2 \left(d+e \sqrt{x}\right)^4}{e^6} + \frac{72 d \left(d+e \sqrt{x}\right)^5}{e^6} - \frac{10 \left(d+e \sqrt{x}\right)^6}{e^6} - \frac{60 d^6 \text{Log}\left[d+e \sqrt{x}\right]}{e^6}\right) \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right) + \frac{1}{3} x^3 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2$$

Problem 409: Result valid but suboptimal antiderivative.

$$\int x\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2 dx$$

Optimal (type 3, 342 leaves, 8 steps):

$$\frac{3 b^2 d^2 n^2 \left(d+e\sqrt{x}\right)^2}{2 e^4}-\frac{4 b^2 d n^2 \left(d+e\sqrt{x}\right)^3}{9 e^4}+\frac{b^2 n^2 \left(d+e\sqrt{x}\right)^4}{16 e^4}-\frac{4 b^2 d^3 n^2 \sqrt{x}}{e^3}+\frac{b^2 d^4 n^2 \text{Log}\left[d+e\sqrt{x}\right]^2}{2 e^4}+\frac{4 b d^3 n \left(d+e\sqrt{x}\right)\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{e^4}-\frac{3 b d^2 n \left(d+e\sqrt{x}\right)^2\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{e^4}+\frac{4 b d n \left(d+e\sqrt{x}\right)^3\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{3 e^4}-\frac{b n \left(d+e\sqrt{x}\right)^4\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{4 e^4}-\frac{b d^4 n \text{Log}\left[d+e\sqrt{x}\right]\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{e^4}+\frac{1}{2}x^2\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2$$

Result (type 3, 263 leaves, 8 steps):

$$\frac{3 b^2 d^2 n^2 \left(d+e\sqrt{x}\right)^2}{2 e^4}-\frac{4 b^2 d n^2 \left(d+e\sqrt{x}\right)^3}{9 e^4}+\frac{b^2 n^2 \left(d+e\sqrt{x}\right)^4}{16 e^4}-\frac{4 b^2 d^3 n^2 \sqrt{x}}{e^3}+\frac{b^2 d^4 n^2 \text{Log}\left[d+e\sqrt{x}\right]^2}{2 e^4}+\frac{1}{12} b n \left(\frac{48 d^3 \left(d+e\sqrt{x}\right)}{e^4}-\frac{36 d^2 \left(d+e\sqrt{x}\right)^2}{e^4}+\frac{16 d \left(d+e\sqrt{x}\right)^3}{e^4}-\frac{3 \left(d+e\sqrt{x}\right)^4}{e^4}-\frac{12 d^4 \text{Log}\left[d+e\sqrt{x}\right]}{e^4}\right)\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)+\frac{1}{2}x^2\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2$$

Problem 412: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2}{x^2} dx$$

Optimal (type 4, 155 leaves, 8 steps):

$$-\frac{2\,b\,e\,n\left(d+e\sqrt{x}\right)\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{d^2\sqrt{x}}-\frac{2\,b\,e^2\,n\,\text{Log}\left[1-\frac{d}{d+e\sqrt{x}}\right]\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{d^2}-\frac{\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2}{x}+\frac{b^2\,e^2\,n^2\,\text{Log}[x]}{d^2}+\frac{2\,b^2\,e^2\,n^2\,\text{PolyLog}\left[2,\frac{d}{d+e\sqrt{x}}\right]}{d^2}$$

Result (type 4, 176 leaves, 10 steps):

$$-\frac{2\,b\,e\,n\left(d+e\sqrt{x}\right)\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{d^2\sqrt{x}}+\frac{e^2\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2}{d^2}-\frac{\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2}{x}-\frac{2\,b\,e^2\,n\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)\text{Log}\left[-\frac{e\sqrt{x}}{d}\right]}{d^2}+\frac{b^2\,e^2\,n^2\,\text{Log}[x]}{d^2}-\frac{2\,b^2\,e^2\,n^2\,\text{PolyLog}\left[2,1+\frac{e\sqrt{x}}{d}\right]}{d^2}$$

Problem 413: Result valid but suboptimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2}{x^3}\,dx$$

Optimal (type 4, 293 leaves, 16 steps):

$$-\frac{b^2\,e^2\,n^2}{6\,d^2\,x}+\frac{5\,b^2\,e^3\,n^2}{6\,d^3\sqrt{x}}-\frac{5\,b^2\,e^4\,n^2\,\text{Log}\left[d+e\sqrt{x}\right]}{6\,d^4}-\frac{b\,e\,n\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{3\,d\,x^{3/2}}+\frac{b\,e^2\,n\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{2\,d^2\,x}-\frac{b\,e^3\,n\left(d+e\sqrt{x}\right)\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{d^4\sqrt{x}}-\frac{b\,e^4\,n\,\text{Log}\left[1-\frac{d}{d+e\sqrt{x}}\right]\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)}{d^4}-\frac{\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2}{2\,x^2}+\frac{11\,b^2\,e^4\,n^2\,\text{Log}[x]}{12\,d^4}+\frac{b^2\,e^4\,n^2\,\text{PolyLog}\left[2,\frac{d}{d+e\sqrt{x}}\right]}{d^4}$$

Result (type 4, 318 leaves, 18 steps):

$$-\frac{b^2 e^2 n^2}{6 d^2 x}+\frac{5 b^2 e^3 n^2}{6 d^3 \sqrt{x}}-\frac{5 b^2 e^4 n^2 \operatorname{Log}\left[d+e \sqrt{x}\right]}{6 d^4}-\frac{b e n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{3 d x^{3/2}}+$$
$$\frac{b e^2 n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{2 d^2 x}-\frac{b e^3 n \left(d+e \sqrt{x}\right) \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{d^4 \sqrt{x}}+$$
$$\frac{e^4 \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{2 d^4}-\frac{\left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{2 x^2}-$$
$$\frac{b e^4 n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e \sqrt{x}}{d}\right]}{d^4}+\frac{11 b^2 e^4 n^2 \operatorname{Log}[x]}{12 d^4}-\frac{b^2 e^4 n^2 \operatorname{PolyLog}\left[2, 1+\frac{e \sqrt{x}}{d}\right]}{d^4}$$

Problem 414: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{x^4} \, dx$$

Optimal (type 4, 408 leaves, 24 steps):

$$-\frac{b^2 e^2 n^2}{30 d^2 x^2}+\frac{b^2 e^3 n^2}{10 d^3 x^{3/2}}-\frac{47 b^2 e^4 n^2}{180 d^4 x}+\frac{77 b^2 e^5 n^2}{90 d^5 \sqrt{x}}-$$
$$\frac{77 b^2 e^6 n^2 \operatorname{Log}\left[d+e \sqrt{x}\right]}{90 d^6}-\frac{2 b e n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{15 d x^{5/2}}+$$
$$\frac{b e^2 n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{6 d^2 x^2}-\frac{2 b e^3 n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{9 d^3 x^{3/2}}+$$
$$\frac{b e^4 n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{3 d^4 x}-\frac{2 b e^5 n \left(d+e \sqrt{x}\right) \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{3 d^6 \sqrt{x}}-$$
$$\frac{2 b e^6 n \operatorname{Log}\left[1-\frac{d}{d+e \sqrt{x}}\right] \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{3 d^6}-$$
$$\frac{\left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{3 x^3}+\frac{137 b^2 e^6 n^2 \operatorname{Log}[x]}{180 d^6}+\frac{2 b^2 e^6 n^2 \operatorname{PolyLog}\left[2, \frac{d}{d+e \sqrt{x}}\right]}{3 d^6}$$

Result (type 4, 432 leaves, 26 steps):

$$-\frac{b^2 e^2 n^2}{30 d^2 x^2}+\frac{b^2 e^3 n^2}{10 d^3 x^{3/2}}-\frac{47 b^2 e^4 n^2}{180 d^4 x}+\frac{77 b^2 e^5 n^2}{90 d^5 \sqrt{x}}-\frac{77 b^2 e^6 n^2 \operatorname{Log}\left[d+e \sqrt{x}\right]}{90 d^6}-\frac{2 b e n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{15 d x^{5/2}}+\frac{b e^2 n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{6 d^2 x^2}-\frac{2 b e^3 n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{9 d^3 x^{3/2}}+\frac{b e^4 n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{3 d^4 x}-\frac{2 b e^5 n \left(d+e \sqrt{x}\right) \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{3 d^6 \sqrt{x}}+\frac{e^6 \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{3 d^6}-\frac{\left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{3 x^3}-\frac{2 b e^6 n \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e \sqrt{x}}{d}\right]}{3 d^6}+\frac{137 b^2 e^6 n^2 \operatorname{Log}[x]}{180 d^6}-\frac{2 b^2 e^6 n^2 \operatorname{PolyLog}\left[2, 1+\frac{e \sqrt{x}}{d}\right]}{3 d^6}$$

Problem 419: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^3}{x^2} \, dx$$

Optimal (type 4, 263 leaves, 10 steps):

$$-\frac{3 b e n \left(d+e \sqrt{x}\right) \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{d^2 \sqrt{x}}-\frac{3 b e^2 n \operatorname{Log}\left[1-\frac{d}{d+e \sqrt{x}}\right] \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{d^2}-\frac{\left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^3}{x}+\frac{6 b^2 e^2 n^2 \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e \sqrt{x}}{d}\right]}{d^2}+\frac{6 b^2 e^2 n^2 \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{d}{d+e \sqrt{x}}\right]}{d^2}+\frac{6 b^3 e^2 n^3 \operatorname{PolyLog}\left[2, 1+\frac{e \sqrt{x}}{d}\right]}{d^2}+\frac{6 b^3 e^2 n^3 \operatorname{PolyLog}\left[3, \frac{d}{d+e \sqrt{x}}\right]}{d^2}$$

Result (type 4, 283 leaves, 13 steps):

$$-\frac{3 b e n \left(d+e \sqrt{x}\right) \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{d^2 \sqrt{x}}+\frac{e^2 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^3}{d^2}-\frac{\left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^3}{x}+\frac{6 b^2 e^2 n^2 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right) \text{Log}\left[-\frac{e \sqrt{x}}{d}\right]}{d^2}-\frac{3 b e^2 n \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2 \text{Log}\left[-\frac{e \sqrt{x}}{d}\right]}{d^2}+\frac{6 b^3 e^2 n^3 \text{PolyLog}\left[2,1+\frac{e \sqrt{x}}{d}\right]}{d^2}-\frac{6 b^2 e^2 n^2 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right) \text{PolyLog}\left[2,1+\frac{e \sqrt{x}}{d}\right]}{d^2}+\frac{6 b^3 e^2 n^3 \text{PolyLog}\left[3,1+\frac{e \sqrt{x}}{d}\right]}{d^2}$$

Problem 420: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^3}{x^3} \, dx$$

Optimal (type 4, 573 leaves, 28 steps):

$$-\frac{b^3 e^3 n^3}{2 d^3 \sqrt{x}}+\frac{b^3 e^4 n^3 \text{Log}\left[d+e \sqrt{x}\right]}{2 d^4}-\frac{b^2 e^2 n^2 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{2 d^2 x}+\frac{5 b^2 e^3 n^2 \left(d+e \sqrt{x}\right) \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{2 d^4 \sqrt{x}}+\frac{5 b^2 e^4 n^2 \text{Log}\left[1-\frac{d}{d+e \sqrt{x}}\right] \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{2 d^4}-\frac{b e n \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{2 d x^{3/2}}+\frac{3 b e^2 n \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{4 d^2 x}-\frac{3 b e^3 n \left(d+e \sqrt{x}\right) \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{2 d^4 \sqrt{x}}-\frac{3 b e^4 n \text{Log}\left[1-\frac{d}{d+e \sqrt{x}}\right] \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{2 d^4}-\frac{\left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^3}{2 x^2}+\frac{3 b^2 e^4 n^2 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right) \text{Log}\left[-\frac{e \sqrt{x}}{d}\right]}{d^4}-\frac{3 b^3 e^4 n^3 \text{Log}[x]}{2 d^4}-\frac{5 b^3 e^4 n^3 \text{PolyLog}\left[2,\frac{d}{d+e \sqrt{x}}\right]}{2 d^4}+\frac{3 b^2 e^4 n^2 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{d}{d+e \sqrt{x}}\right]}{d^4}+\frac{3 b^3 e^4 n^3 \text{PolyLog}\left[2,1+\frac{e \sqrt{x}}{d}\right]}{d^4}+\frac{3 b^3 e^4 n^3 \text{PolyLog}\left[3,\frac{d}{d+e \sqrt{x}}\right]}{d^4}$$

Result (type 4, 550 leaves, 35 steps):

$$-\frac{b^3 e^3 n^3}{2 d^3 \sqrt{x}}+\frac{b^3 e^4 n^3 \text{Log}\left[d+e \sqrt{x}\right]}{2 d^4}-\frac{b^2 e^2 n^2 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{2 d^2 x}+\frac{5 b^2 e^3 n^2 \left(d+e \sqrt{x}\right) \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)}{2 d^4 \sqrt{x}}-\frac{5 b e^4 n \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{4 d^4}-\frac{b e n \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{2 d x^{3/2}}+\frac{3 b e^2 n \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{4 d^2 x}-\frac{3 b e^3 n \left(d+e \sqrt{x}\right) \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2}{2 d^4 \sqrt{x}}+\frac{e^4 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^3}{2 d^4}-\frac{\left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^3}{2 x^2}+\frac{11 b^2 e^4 n^2 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right) \text{Log}\left[-\frac{e \sqrt{x}}{d}\right]}{2 d^4}-\frac{3 b e^4 n \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right)^2 \text{Log}\left[-\frac{e \sqrt{x}}{d}\right]}{2 d^4}-\frac{3 b^3 e^4 n^3 \text{Log}[x]}{2 d^4}+\frac{11 b^3 e^4 n^3 \text{PolyLog}\left[2,1+\frac{e \sqrt{x}}{d}\right]}{2 d^4}-\frac{3 b^2 e^4 n^2 \left(a+b \text{Log}\left[c \left(d+e \sqrt{x}\right)^n\right]\right) \text{PolyLog}\left[2,1+\frac{e \sqrt{x}}{d}\right]}{d^4}+\frac{3 b^3 e^4 n^3 \text{PolyLog}\left[3,1+\frac{e \sqrt{x}}{d}\right]}{d^4}$$

Problem 429: Result valid but suboptimal antiderivative.

$$\int x^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2 \, dx$$

Optimal (type 4, 404 leaves, 24 steps):

$$-\frac{77 b^2 e^5 n^2 \sqrt{x}}{90 d^5}+\frac{47 b^2 e^4 n^2 x}{180 d^4}-\frac{b^2 e^3 n^2 x^{3/2}}{10 d^3}+\frac{b^2 e^2 n^2 x^2}{30 d^2}+\frac{77 b^2 e^6 n^2 \text{Log}\left[d+\frac{e}{\sqrt{x}}\right]}{90 d^6}+\frac{2 b e^5 n \left(d+\frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{3 d^6}-\frac{b e^4 n x \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{3 d^4}+\frac{2 b e^3 n x^{3/2} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{9 d^3}-\frac{b e^2 n x^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{6 d^2}+\frac{2 b e n x^{5/2} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{15 d}+\frac{2 b e^6 n \text{Log}\left[1-\frac{d}{d+\frac{e}{\sqrt{x}}}\right] \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{3 d^6}+\frac{1}{3} x^3 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2+\frac{137 b^2 e^6 n^2 \text{Log}[x]}{180 d^6}-\frac{2 b^2 e^6 n^2 \text{PolyLog}\left[2,\frac{d}{d+\frac{e}{\sqrt{x}}}\right]}{3 d^6}$$

Result (type 4, 428 leaves, 26 steps):

$$-\frac{77 b^2 e^5 n^2 \sqrt{x}}{90 d^5}+\frac{47 b^2 e^4 n^2 x}{180 d^4}-\frac{b^2 e^3 n^2 x^{3/2}}{10 d^3}+\frac{b^2 e^2 n^2 x^2}{30 d^2}+\frac{77 b^2 e^6 n^2 \text{Log}\left[d+\frac{e}{\sqrt{x}}\right]}{90 d^6}+\frac{2 b e^5 n \left(d+\frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{3 d^6}-\frac{b e^4 n x \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{3 d^4}+\frac{2 b e^3 n x^{3/2} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{9 d^3}-\frac{b e^2 n x^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{6 d^2}+\frac{2 b e n x^{5/2} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{15 d}-\frac{e^6 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{3 d^6}+\frac{1}{3} x^3 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2+\frac{2 b e^6 n \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right) \text{Log}\left[-\frac{e}{d \sqrt{x}}\right]}{3 d^6}+\frac{137 b^2 e^6 n^2 \text{Log}[x]}{180 d^6}+\frac{2 b^2 e^6 n^2 \text{PolyLog}\left[2,1+\frac{e}{d \sqrt{x}}\right]}{3 d^6}$$

Problem 430: Result valid but suboptimal antiderivative.

$$\int x \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 288 leaves, 16 steps):

$$-\frac{5 b^2 e^3 n^2 \sqrt{x}}{6 d^3}+\frac{b^2 e^2 n^2 x}{6 d^2}+\frac{5 b^2 e^4 n^2 \text{Log}\left[d+\frac{e}{\sqrt{x}}\right]}{6 d^4}+\frac{b e^3 n \left(d+\frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{d^4}-\frac{b e^2 n x \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{2 d^2}+\frac{b e n x^{3/2} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{3 d}+\frac{b e^4 n \text{Log}\left[1-\frac{d}{d+\frac{e}{\sqrt{x}}}\right] \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{d^4}+\frac{1}{2} x^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2+\frac{11 b^2 e^4 n^2 \text{Log}[x]}{12 d^4}-\frac{b^2 e^4 n^2 \text{PolyLog}\left[2,\frac{d}{d+\frac{e}{\sqrt{x}}}\right]}{d^4}$$

Result (type 4, 311 leaves, 18 steps):

$$-\frac{5 b^2 e^3 n^2 \sqrt{x}}{6 d^3}+\frac{b^2 e^2 n^2 x}{6 d^2}+\frac{5 b^2 e^4 n^2 \text{Log}\left[d+\frac{e}{\sqrt{x}}\right]}{6 d^4}+\frac{b e^3 n \left(d+\frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{d^4}-\frac{b e^2 n x \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{2 d^2}+\frac{b e n x^{3/2} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{3 d}-\frac{e^4 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{2 d^4}+\frac{1}{2} x^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2+\frac{b e^4 n \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right) \text{Log}\left[-\frac{e}{d \sqrt{x}}\right]}{d^4}+\frac{11 b^2 e^4 n^2 \text{Log}[x]}{12 d^4}+\frac{b^2 e^4 n^2 \text{PolyLog}\left[2, 1+\frac{e}{d \sqrt{x}}\right]}{d^4}$$

Problem 431: Result valid but suboptimal antiderivative.

$$\int \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 152 leaves, 9 steps):

$$\frac{2 b e n \left(d+\frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{d^2}+\frac{2 b e^2 n \text{Log}\left[1-\frac{d}{d+\frac{e}{\sqrt{x}}}\right] \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{d^2}+x \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2+\frac{b^2 e^2 n^2 \text{Log}[x]}{d^2}-\frac{2 b^2 e^2 n^2 \text{PolyLog}\left[2, \frac{d}{d+\frac{e}{\sqrt{x}}}\right]}{d^2}$$

Result (type 4, 174 leaves, 11 steps):

$$\frac{2 b e n \left(d+\frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{d^2}-\frac{e^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{d^2}+x \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2+\frac{2 b e^2 n \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right) \text{Log}\left[-\frac{e}{d \sqrt{x}}\right]}{d^2}+\frac{b^2 e^2 n^2 \text{Log}[x]}{d^2}+\frac{2 b^2 e^2 n^2 \text{PolyLog}\left[2, 1+\frac{e}{d \sqrt{x}}\right]}{d^2}$$

Problem 434: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{x^3} dx$$

Optimal (type 3, 341 leaves, 8 steps):

$$-\frac{3 b^2 d^2 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^2}{2 e^4}+\frac{4 b^2 d n^2 \left(d+\frac{e}{\sqrt{x}}\right)^3}{9 e^4}-\frac{b^2 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^4}{16 e^4}+\frac{4 b^2 d^3 n^2}{e^3 \sqrt{x}}-\frac{b^2 d^4 n^2 \text{Log}\left[d+\frac{e}{\sqrt{x}}\right]^2}{2 e^4}-$$
$$\frac{4 b d^3 n \left(d+\frac{e}{\sqrt{x}}\right) \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{e^4}+\frac{3 b d^2 n \left(d+\frac{e}{\sqrt{x}}\right)^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{e^4}-$$
$$\frac{4 b d n \left(d+\frac{e}{\sqrt{x}}\right)^3 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{3 e^4}+\frac{b n \left(d+\frac{e}{\sqrt{x}}\right)^4 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{4 e^4}+$$
$$\frac{b d^4 n \text{Log}\left[d+\frac{e}{\sqrt{x}}\right] \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{e^4}-\frac{\left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{2 x^2}$$

Result (type 3, 263 leaves, 8 steps):

$$-\frac{3 b^2 d^2 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^2}{2 e^4}+\frac{4 b^2 d n^2 \left(d+\frac{e}{\sqrt{x}}\right)^3}{9 e^4}-\frac{b^2 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^4}{16 e^4}+\frac{4 b^2 d^3 n^2}{e^3 \sqrt{x}}-\frac{b^2 d^4 n^2 \text{Log}\left[d+\frac{e}{\sqrt{x}}\right]^2}{2 e^4}-$$
$$\frac{1}{12} b n \left(\frac{48 d^3 \left(d+\frac{e}{\sqrt{x}}\right)}{e^4}-\frac{36 d^2 \left(d+\frac{e}{\sqrt{x}}\right)^2}{e^4}+\frac{16 d \left(d+\frac{e}{\sqrt{x}}\right)^3}{e^4}-\frac{3 \left(d+\frac{e}{\sqrt{x}}\right)^4}{e^4}-\frac{12 d^4 \text{Log}\left[d+\frac{e}{\sqrt{x}}\right]}{e^4}\right)$$
$$\left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)-\frac{\left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{2 x^2}$$

Problem 435: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{x^4} \, dx$$

Optimal (type 3, 480 leaves, 8 steps):

$$-\frac{5 b^2 d^4 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^2}{2 e^6}+\frac{40 b^2 d^3 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^3}{27 e^6}-\frac{5 b^2 d^2 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^4}{8 e^6}+\frac{4 b^2 d n^2 \left(d+\frac{e}{\sqrt{x}}\right)^5}{25 e^6}-\frac{b^2 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^6}{54 e^6}+\frac{4 b^2 d^5 n^2}{e^5 \sqrt{x}}-\frac{b^2 d^6 n^2 \text{Log}\left[d+\frac{e}{\sqrt{x}}\right]^2}{3 e^6}-\frac{4 b d^5 n \left(d+\frac{e}{\sqrt{x}}\right) \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{e^6}+\frac{5 b d^4 n \left(d+\frac{e}{\sqrt{x}}\right)^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{e^6}-\frac{40 b d^3 n \left(d+\frac{e}{\sqrt{x}}\right)^3 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{9 e^6}+\frac{5 b d^2 n \left(d+\frac{e}{\sqrt{x}}\right)^4 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{2 e^6}-\frac{4 b d n \left(d+\frac{e}{\sqrt{x}}\right)^5 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{5 e^6}+\frac{b n \left(d+\frac{e}{\sqrt{x}}\right)^6 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{9 e^6}+\frac{2 b d^6 n \text{Log}\left[d+\frac{e}{\sqrt{x}}\right] \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{3 e^6}-\frac{\left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{3 x^3}$$

Result (type 3, 355 leaves, 8 steps):

$$-\frac{5 b^2 d^4 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^2}{2 e^6}+\frac{40 b^2 d^3 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^3}{27 e^6}-\frac{5 b^2 d^2 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^4}{8 e^6}+\frac{4 b^2 d n^2 \left(d+\frac{e}{\sqrt{x}}\right)^5}{25 e^6}-\frac{b^2 n^2 \left(d+\frac{e}{\sqrt{x}}\right)^6}{54 e^6}+\frac{4 b^2 d^5 n^2}{e^5 \sqrt{x}}-\frac{b^2 d^6 n^2 \text{Log}\left[d+\frac{e}{\sqrt{x}}\right]^2}{3 e^6}-\frac{1}{90} b n \left(\frac{360 d^5 \left(d+\frac{e}{\sqrt{x}}\right)}{e^6}-\frac{450 d^4 \left(d+\frac{e}{\sqrt{x}}\right)^2}{e^6}+\frac{400 d^3 \left(d+\frac{e}{\sqrt{x}}\right)^3}{e^6}-\frac{225 d^2 \left(d+\frac{e}{\sqrt{x}}\right)^4}{e^6}+\frac{72 d \left(d+\frac{e}{\sqrt{x}}\right)^5}{e^6}-\frac{10 \left(d+\frac{e}{\sqrt{x}}\right)^6}{e^6}-\frac{60 d^6 \text{Log}\left[d+\frac{e}{\sqrt{x}}\right]}{e^6}\right) \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)-\frac{\left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{3 x^3}$$

Problem 436: Result valid but suboptimal antiderivative.

$$\int x \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^3 dx$$

Optimal (type 4, 569 leaves, 28 steps):

$$\frac{b^3 e^3 n^3 \sqrt{x}}{2 d^3}-\frac{b^3 e^4 n^3 \operatorname{Log}\left[d+\frac{e}{\sqrt{x}}\right]}{2 d^4}-\frac{5 b^2 e^3 n^2 \left(d+\frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{2 d^4}+$$

$$\frac{b^2 e^2 n^2 x \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{2 d^2}-\frac{5 b^2 e^4 n^2 \operatorname{Log}\left[1-\frac{d}{d+\frac{e}{\sqrt{x}}}\right] \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)}{2 d^4}+$$

$$\frac{3 b e^3 n \left(d+\frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{2 d^4}-$$

$$\frac{3 b e^2 n x \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{4 d^2}+\frac{b e n x^{3/2} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{2 d}+$$

$$\frac{3 b e^4 n \operatorname{Log}\left[1-\frac{d}{d+\frac{e}{\sqrt{x}}}\right] \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{2 d^4}+\frac{1}{2} x^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^3-$$

$$\frac{3 b^2 e^4 n^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e}{d \sqrt{x}}\right]}{d^4}-\frac{3 b^3 e^4 n^3 \operatorname{Log}[x]}{2 d^4}+$$

$$\frac{5 b^3 e^4 n^3 \operatorname{PolyLog}\left[2, \frac{d}{d+\frac{e}{\sqrt{x}}}\right]}{2 d^4}-\frac{3 b^2 e^4 n^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{d}{d+\frac{e}{\sqrt{x}}}\right]}{d^4}-$$

$$\frac{3 b^3 e^4 n^3 \operatorname{PolyLog}\left[2, 1+\frac{e}{d \sqrt{x}}\right]}{d^4}-\frac{3 b^3 e^4 n^3 \operatorname{PolyLog}\left[3, \frac{d}{d+\frac{e}{\sqrt{x}}}\right]}{d^4}$$

Result (type 4, 546 leaves, 35 steps):

$$\frac{b^3 e^3 n^3 \sqrt{x}}{2 d^3} - \frac{b^3 e^4 n^3 \operatorname{Log}\left[d + \frac{e}{\sqrt{x}}\right]}{2 d^4} - \frac{5 b^2 e^3 n^2 \left(d + \frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)}{2 d^4} +$$
$$\frac{b^2 e^2 n^2 x \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)}{2 d^2} + \frac{5 b e^4 n \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{4 d^4} +$$
$$\frac{3 b e^3 n \left(d + \frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{2 d^4} - \frac{3 b e^2 n x \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{4 d^2} +$$
$$\frac{b e n x^{3/2} \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{2 d} - \frac{e^4 \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)^3}{2 d^4} +$$
$$\frac{1}{2} x^2 \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)^3 - \frac{11 b^2 e^4 n^2 \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e}{d \sqrt{x}}\right]}{2 d^4} +$$
$$\frac{3 b e^4 n \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)^2 \operatorname{Log}\left[-\frac{e}{d \sqrt{x}}\right]}{2 d^4} -$$
$$\frac{3 b^3 e^4 n^3 \operatorname{Log}[x]}{2 d^4} - \frac{11 b^3 e^4 n^3 \operatorname{PolyLog}\left[2, 1 + \frac{e}{d \sqrt{x}}\right]}{2 d^4} +$$
$$\frac{3 b^2 e^4 n^2 \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right) \operatorname{PolyLog}\left[2, 1 + \frac{e}{d \sqrt{x}}\right]}{d^4} - \frac{3 b^3 e^4 n^3 \operatorname{PolyLog}\left[3, 1 + \frac{e}{d \sqrt{x}}\right]}{d^4}$$

Problem 437: Result valid but suboptimal antiderivative.

$$\int \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)^3 \, dx$$

Optimal (type 4, 260 leaves, 11 steps):

$$\frac{3 b e n \left(d + \frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{d^2} + \frac{3 b e^2 n \operatorname{Log}\left[1 - \frac{d}{d + \frac{e}{\sqrt{x}}}\right] \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{d^2} +$$
$$x \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right)^3 - \frac{6 b^2 e^2 n^2 \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e}{d \sqrt{x}}\right]}{d^2} -$$
$$\frac{6 b^2 e^2 n^2 \left(a + b \operatorname{Log}\left[c \left(d + \frac{e}{\sqrt{x}}\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{d}{d + \frac{e}{\sqrt{x}}}\right]}{d^2} -$$
$$\frac{6 b^3 e^2 n^3 \operatorname{PolyLog}\left[2, 1 + \frac{e}{d \sqrt{x}}\right]}{d^2} - \frac{6 b^3 e^2 n^3 \operatorname{PolyLog}\left[3, \frac{d}{d + \frac{e}{\sqrt{x}}}\right]}{d^2}$$

Result (type 4, 281 leaves, 14 steps):

$$\frac{3 b e n \left(d+\frac{e}{\sqrt{x}}\right) \sqrt{x} \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{d^2}-\frac{e^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^3}{d^2}+x \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^3-\frac{6 b^2 e^2 n^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right) \text{Log}\left[-\frac{e}{d \sqrt{x}}\right]}{d^2}+\frac{3 b e^2 n \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2 \text{Log}\left[-\frac{e}{d \sqrt{x}}\right]}{d^2}-\frac{6 b^3 e^2 n^3 \text{PolyLog}\left[2,1+\frac{e}{d \sqrt{x}}\right]}{d^2}+\frac{6 b^2 e^2 n^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right) \text{PolyLog}\left[2,1+\frac{e}{d \sqrt{x}}\right]}{d^2}-\frac{6 b^3 e^2 n^3 \text{PolyLog}\left[3,1+\frac{e}{d \sqrt{x}}\right]}{d^2}$$

Problem 450: Result valid but suboptimal antiderivative.

$$\int x^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2 \, dx$$

Optimal (type 3, 680 leaves, 8 steps):

$$-\frac{6 b^2 d^7 n^2 \left(d+e x^{1/3}\right)^2}{e^9}+\frac{56 b^2 d^6 n^2 \left(d+e x^{1/3}\right)^3}{9 e^9}-\frac{21 b^2 d^5 n^2 \left(d+e x^{1/3}\right)^4}{4 e^9}+\frac{84 b^2 d^4 n^2 \left(d+e x^{1/3}\right)^5}{25 e^9}-\frac{14 b^2 d^3 n^2 \left(d+e x^{1/3}\right)^6}{9 e^9}+\frac{24 b^2 d^2 n^2 \left(d+e x^{1/3}\right)^7}{49 e^9}-\frac{3 b^2 d n^2 \left(d+e x^{1/3}\right)^8}{32 e^9}+\frac{2 b^2 n^2 \left(d+e x^{1/3}\right)^9}{243 e^9}+\frac{6 b^2 d^8 n^2 x^{1/3}}{e^8}-\frac{b^2 d^9 n^2 \text{Log}\left[d+e x^{1/3}\right]^2}{3 e^9}-\frac{6 b d^8 n \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{e^9}+\frac{12 b d^7 n \left(d+e x^{1/3}\right)^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{e^9}-\frac{56 b d^6 n \left(d+e x^{1/3}\right)^3 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{3 e^9}+\frac{21 b d^5 n \left(d+e x^{1/3}\right)^4 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{e^9}-\frac{84 b d^4 n \left(d+e x^{1/3}\right)^5 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{5 e^9}+\frac{28 b d^3 n \left(d+e x^{1/3}\right)^6 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{3 e^9}-\frac{24 b d^2 n \left(d+e x^{1/3}\right)^7 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{7 e^9}+\frac{3 b d n \left(d+e x^{1/3}\right)^8 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{4 e^9}-\frac{2 b n \left(d+e x^{1/3}\right)^9 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{27 e^9}+\frac{2 b d^9 n \text{Log}\left[d+e x^{1/3}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{3 e^9}+\frac{1}{3} x^3 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2$$

Result (type 3, 491 leaves, 8 steps):

$$-\frac{6 b^2 d^7 n^2 \left(d+e x^{1/3}\right)^2}{e^9}+\frac{56 b^2 d^6 n^2 \left(d+e x^{1/3}\right)^3}{9 e^9}-\frac{21 b^2 d^5 n^2 \left(d+e x^{1/3}\right)^4}{4 e^9}+\frac{84 b^2 d^4 n^2 \left(d+e x^{1/3}\right)^5}{25 e^9}-\frac{14 b^2 d^3 n^2 \left(d+e x^{1/3}\right)^6}{9 e^9}+\frac{24 b^2 d^2 n^2 \left(d+e x^{1/3}\right)^7}{49 e^9}-\frac{3 b^2 d n^2 \left(d+e x^{1/3}\right)^8}{32 e^9}+\frac{2 b^2 n^2 \left(d+e x^{1/3}\right)^9}{243 e^9}+\frac{6 b^2 d^8 n^2 x^{1/3}}{e^8}-\frac{b^2 d^9 n^2 \text{Log}\left[d+e x^{1/3}\right]^2}{3 e^9}-\frac{1}{3780} b n \left(\frac{22680 d^8 \left(d+e x^{1/3}\right)}{e^9}-\frac{45360 d^7 \left(d+e x^{1/3}\right)^2}{e^9}+\frac{70560 d^6 \left(d+e x^{1/3}\right)^3}{e^9}-\frac{79380 d^5 \left(d+e x^{1/3}\right)^4}{e^9}+\frac{63504 d^4 \left(d+e x^{1/3}\right)^5}{e^9}-\frac{35280 d^3 \left(d+e x^{1/3}\right)^6}{e^9}+\frac{12960 d^2 \left(d+e x^{1/3}\right)^7}{e^9}-\frac{2835 d \left(d+e x^{1/3}\right)^8}{e^9}+\frac{280 \left(d+e x^{1/3}\right)^9}{e^9}-\frac{2520 d^9 \text{Log}\left[d+e x^{1/3}\right]}{e^9}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)+\frac{1}{3} x^3 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2$$

Problem 451: Result valid but suboptimal antiderivative.

$$\int x \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2 dx$$

Optimal (type 3, 480 leaves, 8 steps):

$$\frac{15 b^2 d^4 n^2 \left(d+e x^{1/3}\right)^2}{4 e^6}-\frac{20 b^2 d^3 n^2 \left(d+e x^{1/3}\right)^3}{9 e^6}+\frac{15 b^2 d^2 n^2 \left(d+e x^{1/3}\right)^4}{16 e^6}-\frac{6 b^2 d n^2 \left(d+e x^{1/3}\right)^5}{25 e^6}+\frac{b^2 n^2 \left(d+e x^{1/3}\right)^6}{36 e^6}-\frac{6 b^2 d^5 n^2 x^{1/3}}{e^5}+\frac{b^2 d^6 n^2 \text{Log}\left[d+e x^{1/3}\right]^2}{2 e^6}+\frac{6 b d^5 n \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{e^6}-\frac{15 b d^4 n \left(d+e x^{1/3}\right)^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{2 e^6}+\frac{20 b d^3 n \left(d+e x^{1/3}\right)^3 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{3 e^6}-\frac{15 b d^2 n \left(d+e x^{1/3}\right)^4 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{4 e^6}+\frac{6 b d n \left(d+e x^{1/3}\right)^5 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{5 e^6}-\frac{b n \left(d+e x^{1/3}\right)^6 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{6 e^6}-\frac{b d^6 n \text{Log}\left[d+e x^{1/3}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{e^6}+\frac{1}{2} x^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2$$

Result (type 3, 355 leaves, 8 steps):

$$\frac{15\,b^2\,d^4\,n^2\,\left(d+e\,x^{1/3}\right)^2}{4\,e^6}-\frac{20\,b^2\,d^3\,n^2\,\left(d+e\,x^{1/3}\right)^3}{9\,e^6}+\frac{15\,b^2\,d^2\,n^2\,\left(d+e\,x^{1/3}\right)^4}{16\,e^6}-$$
$$\frac{6\,b^2\,d\,n^2\,\left(d+e\,x^{1/3}\right)^5}{25\,e^6}+\frac{b^2\,n^2\,\left(d+e\,x^{1/3}\right)^6}{36\,e^6}-\frac{6\,b^2\,d^5\,n^2\,x^{1/3}}{e^5}+\frac{b^2\,d^6\,n^2\,\mathrm{Log}\left[d+e\,x^{1/3}\right]^2}{2\,e^6}+$$
$$\frac{1}{60}\,b\,n\,\left(\frac{360\,d^5\,\left(d+e\,x^{1/3}\right)}{e^6}-\frac{450\,d^4\,\left(d+e\,x^{1/3}\right)^2}{e^6}+\frac{400\,d^3\,\left(d+e\,x^{1/3}\right)^3}{e^6}-\right.$$
$$\left.\frac{225\,d^2\,\left(d+e\,x^{1/3}\right)^4}{e^6}+\frac{72\,d\,\left(d+e\,x^{1/3}\right)^5}{e^6}-\frac{10\,\left(d+e\,x^{1/3}\right)^6}{e^6}-\frac{60\,d^6\,\mathrm{Log}\left[d+e\,x^{1/3}\right]}{e^6}\right)$$
$$\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)+\frac{1}{2}\,x^2\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2$$

Problem 452: Result valid but suboptimal antiderivative.

$$\int\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2\,dx$$

Optimal (type 3, 267 leaves, 8 steps):

$$-\frac{3\,b^2\,d\,n^2\,\left(d+e\,x^{1/3}\right)^2}{2\,e^3}+\frac{2\,b^2\,n^2\,\left(d+e\,x^{1/3}\right)^3}{9\,e^3}+\frac{6\,b^2\,d^2\,n^2\,x^{1/3}}{e^2}-$$
$$\frac{b^2\,d^3\,n^2\,\mathrm{Log}\left[d+e\,x^{1/3}\right]^2}{e^3}-\frac{6\,b\,d^2\,n\,\left(d+e\,x^{1/3}\right)\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)}{e^3}+$$
$$\frac{3\,b\,d\,n\,\left(d+e\,x^{1/3}\right)^2\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)}{e^3}-\frac{2\,b\,n\,\left(d+e\,x^{1/3}\right)^3\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)}{3\,e^3}+$$
$$\frac{2\,b\,d^3\,n\,\mathrm{Log}\left[d+e\,x^{1/3}\right]\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)}{e^3}+x\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2$$

Result (type 3, 210 leaves, 8 steps):

$$-\frac{3\,b^2\,d\,n^2\,\left(d+e\,x^{1/3}\right)^2}{2\,e^3}+\frac{2\,b^2\,n^2\,\left(d+e\,x^{1/3}\right)^3}{9\,e^3}+\frac{6\,b^2\,d^2\,n^2\,x^{1/3}}{e^2}-\frac{b^2\,d^3\,n^2\,\mathrm{Log}\left[d+e\,x^{1/3}\right]^2}{e^3}-$$
$$\frac{1}{3}\,b\,n\,\left(\frac{18\,d^2\,\left(d+e\,x^{1/3}\right)}{e^3}-\frac{9\,d\,\left(d+e\,x^{1/3}\right)^2}{e^3}+\frac{2\,\left(d+e\,x^{1/3}\right)^3}{e^3}-\frac{6\,d^3\,\mathrm{Log}\left[d+e\,x^{1/3}\right]}{e^3}\right)$$
$$\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)+x\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2$$

Problem 454: Result valid but suboptimal antiderivative.

$$\int\frac{\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2}{x^2}\,dx$$

Optimal (type 4, 231 leaves, 12 steps):

$$-\frac{b^2 e^2 n^2}{d^2 x^{1/3}}+\frac{b^2 e^3 n^2 \text{Log}\left[d+e x^{1/3}\right]}{d^3}-\frac{b e n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{d x^{2/3}}+\frac{2 b e^2 n \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{d^3 x^{1/3}}+\frac{2 b e^3 n \text{Log}\left[1-\frac{d}{d+e x^{1/3}}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{d^3}-\frac{\left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{x}-\frac{b^2 e^3 n^2 \text{Log}[x]}{d^3}-\frac{2 b^2 e^3 n^2 \text{PolyLog}\left[2,\frac{d}{d+e x^{1/3}}\right]}{d^3}$$

Result (type 4, 253 leaves, 14 steps):

$$-\frac{b^2 e^2 n^2}{d^2 x^{1/3}}+\frac{b^2 e^3 n^2 \text{Log}\left[d+e x^{1/3}\right]}{d^3}-\frac{b e n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{d x^{2/3}}+\frac{2 b e^2 n \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{d^3 x^{1/3}}-\frac{e^3 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{d^3}-\frac{\left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{x}+\frac{2 b e^3 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right) \text{Log}\left[-\frac{e x^{1/3}}{d}\right]}{d^3}-\frac{b^2 e^3 n^2 \text{Log}[x]}{d^3}+\frac{2 b^2 e^3 n^2 \text{PolyLog}\left[2,1+\frac{e x^{1/3}}{d}\right]}{d^3}$$

Problem 455: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{x^3} \, dx$$

Optimal (type 4, 405 leaves, 24 steps):

$$-\frac{b^2 e^2 n^2}{20 d^2 x^{4/3}}+\frac{3 b^2 e^3 n^2}{20 d^3 x}-\frac{47 b^2 e^4 n^2}{120 d^4 x^{2/3}}+\frac{77 b^2 e^5 n^2}{60 d^5 x^{1/3}}-\frac{77 b^2 e^6 n^2 \text{Log}\left[d+e x^{1/3}\right]}{60 d^6}-\frac{b e n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{5 d x^{5/3}}+\frac{b e^2 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{4 d^2 x^{4/3}}-\frac{b e^3 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{3 d^3 x}+\frac{b e^4 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{2 d^4 x^{2/3}}-\frac{b e^5 n \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{d^6 x^{1/3}}-\frac{b e^6 n \text{Log}\left[1-\frac{d}{d+e x^{1/3}}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{d^6}-\frac{\left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{2 x^2}+\frac{137 b^2 e^6 n^2 \text{Log}[x]}{180 d^6}+\frac{b^2 e^6 n^2 \text{PolyLog}\left[2,\frac{d}{d+e x^{1/3}}\right]}{d^6}$$

Result (type 4, 430 leaves, 26 steps):

$$-\frac{b^2 e^2 n^2}{20 d^2 x^{4/3}}+\frac{3 b^2 e^3 n^2}{20 d^3 x}-\frac{47 b^2 e^4 n^2}{120 d^4 x^{2/3}}+\frac{77 b^2 e^5 n^2}{60 d^5 x^{1/3}}-\frac{77 b^2 e^6 n^2 \text{Log}\left[d+e x^{1/3}\right]}{60 d^6}-\frac{b e n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{5 d x^{5/3}}+\frac{b e^2 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{4 d^2 x^{4/3}}-\frac{b e^3 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{3 d^3 x}+\frac{b e^4 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{2 d^4 x^{2/3}}-\frac{b e^5 n \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{d^6 x^{1/3}}+\frac{e^6 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{2 d^6}-\frac{\left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{2 x^2}-\frac{b e^6 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right) \text{Log}\left[-\frac{e x^{1/3}}{d}\right]}{d^6}+\frac{137 b^2 e^6 n^2 \text{Log}[x]}{180 d^6}-\frac{b^2 e^6 n^2 \text{PolyLog}\left[2,1+\frac{e x^{1/3}}{d}\right]}{d^6}$$

Problem 461: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^3}{x^2}\, dx$$

Optimal (type 4, 439 leaves, 17 steps):

$$-\frac{3 b^2 e^2 n^2 \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{d^3 x^{1/3}}-\frac{3 b^2 e^3 n^2 \text{Log}\left[1-\frac{d}{d+e x^{1/3}}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{d^3}-\frac{3 b e n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{2 d x^{2/3}}+\frac{3 b e^2 n \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{d^3 x^{1/3}}+\frac{3 b e^3 n \text{Log}\left[1-\frac{d}{d+e x^{1/3}}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{d^3}-\frac{\left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^3}{x}-\frac{6 b^2 e^3 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right) \text{Log}\left[-\frac{e x^{1/3}}{d}\right]}{d^3}+\frac{b^3 e^3 n^3 \text{Log}[x]}{d^3}+\frac{3 b^3 e^3 n^3 \text{PolyLog}\left[2,\frac{d}{d+e x^{1/3}}\right]}{d^3}-\frac{6 b^2 e^3 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{d}{d+e x^{1/3}}\right]}{d^3}-\frac{6 b^3 e^3 n^3 \text{PolyLog}\left[2,1+\frac{e x^{1/3}}{d}\right]}{d^3}-\frac{6 b^3 e^3 n^3 \text{PolyLog}\left[3,\frac{d}{d+e x^{1/3}}\right]}{d^3}$$

Result (type 4, 414 leaves, 22 steps):

$$-\frac{3\,b^2\,e^2\,n^2\,\left(d+e\,x^{1/3}\right)\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)}{d^3\,x^{1/3}}+$$
$$\frac{3\,b\,e^3\,n\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2}{2\,d^3}-\frac{3\,b\,e\,n\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2}{2\,d\,x^{2/3}}+$$
$$\frac{3\,b\,e^2\,n\,\left(d+e\,x^{1/3}\right)\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2}{d^3\,x^{1/3}}-\frac{e^3\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^3}{d^3}-$$
$$\frac{\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^3}{x}-\frac{9\,b^2\,e^3\,n^2\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)\,\mathrm{Log}\left[-\frac{e\,x^{1/3}}{d}\right]}{d^3}+$$
$$\frac{3\,b\,e^3\,n\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2\,\mathrm{Log}\left[-\frac{e\,x^{1/3}}{d}\right]}{d^3}+\frac{b^3\,e^3\,n^3\,\mathrm{Log}[x]}{d^3}-\frac{9\,b^3\,e^3\,n^3\,\mathrm{PolyLog}\left[2,\,1+\frac{e\,x^{1/3}}{d}\right]}{d^3}+$$
$$\frac{6\,b^2\,e^3\,n^2\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)\,\mathrm{PolyLog}\left[2,\,1+\frac{e\,x^{1/3}}{d}\right]}{d^3}-\frac{6\,b^3\,e^3\,n^3\,\mathrm{PolyLog}\left[3,\,1+\frac{e\,x^{1/3}}{d}\right]}{d^3}$$

Problem 462: Result valid but suboptimal antiderivative.

$$\int\frac{\left(a+b\,\mathrm{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^3}{x^3}\,dx$$

Optimal (type 4, 765 leaves, 62 steps) :

$$-\frac{b^3 e^3 n^3}{20 d^3 x}+\frac{3 b^3 e^4 n^3}{10 d^4 x^{2/3}}-\frac{71 b^3 e^5 n^3}{40 d^5 x^{1/3}}+\frac{71 b^3 e^6 n^3 \text{Log}\left[d+e x^{1/3}\right]}{40 d^6}-$$
$$\frac{3 b^2 e^2 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{20 d^2 x^{4/3}}+\frac{9 b^2 e^3 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{20 d^3 x}-$$
$$\frac{47 b^2 e^4 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{40 d^4 x^{2/3}}+\frac{77 b^2 e^5 n^2 \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{20 d^6 x^{1/3}}+$$
$$\frac{77 b^2 e^6 n^2 \text{Log}\left[1-\frac{d}{d+e x^{1/3}}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{20 d^6}-\frac{3 b e n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{10 d x^{5/3}}+$$
$$\frac{3 b e^2 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{8 d^2 x^{4/3}}-\frac{b e^3 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{2 d^3 x}+$$
$$\frac{3 b e^4 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{4 d^4 x^{2/3}}-\frac{3 b e^5 n \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{2 d^6 x^{1/3}}-$$
$$\frac{3 b e^6 n \text{Log}\left[1-\frac{d}{d+e x^{1/3}}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{2 d^6}-\frac{\left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^3}{2 x^2}+$$
$$\frac{3 b^2 e^6 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right) \text{Log}\left[-\frac{e x^{1/3}}{d}\right]}{d^6}-\frac{15 b^3 e^6 n^3 \text{Log}[x]}{8 d^6}-$$
$$\frac{77 b^3 e^6 n^3 \text{PolyLog}\left[2,\frac{d}{d+e x^{1/3}}\right]}{20 d^6}+\frac{3 b^2 e^6 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{d}{d+e x^{1/3}}\right]}{d^6}+$$
$$\frac{3 b^3 e^6 n^3 \text{PolyLog}\left[2,1+\frac{e x^{1/3}}{d}\right]}{d^6}+\frac{3 b^3 e^6 n^3 \text{PolyLog}\left[3,\frac{d}{d+e x^{1/3}}\right]}{d^6}$$

Result (type 4, 742 leaves, 73 steps) :

$$-\frac{b^3 e^3 n^3}{20 d^3 x}+\frac{3 b^3 e^4 n^3}{10 d^4 x^{2/3}}-\frac{71 b^3 e^5 n^3}{40 d^5 x^{1/3}}+\frac{71 b^3 e^6 n^3 \text{Log}\left[d+e x^{1/3}\right]}{40 d^6}-\frac{3 b^2 e^2 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{20 d^2 x^{4/3}}+$$
$$\frac{9 b^2 e^3 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{20 d^3 x}-\frac{47 b^2 e^4 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{40 d^4 x^{2/3}}+$$
$$\frac{77 b^2 e^5 n^2 \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)}{20 d^6 x^{1/3}}-\frac{77 b e^6 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{40 d^6}-$$
$$\frac{3 b e n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{10 d x^{5/3}}+\frac{3 b e^2 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{8 d^2 x^{4/3}}-$$
$$\frac{b e^3 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{2 d^3 x}+\frac{3 b e^4 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{4 d^4 x^{2/3}}-$$
$$\frac{3 b e^5 n \left(d+e x^{1/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2}{2 d^6 x^{1/3}}+\frac{e^6 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^3}{2 d^6}-$$
$$\frac{\left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^3}{2 x^2}+\frac{137 b^2 e^6 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right) \text{Log}\left[-\frac{e x^{1/3}}{d}\right]}{20 d^6}-$$
$$\frac{3 b e^6 n \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right)^2 \text{Log}\left[-\frac{e x^{1/3}}{d}\right]}{2 d^6}-$$
$$\frac{15 b^3 e^6 n^3 \text{Log}[x]}{8 d^6}+\frac{137 b^3 e^6 n^3 \text{PolyLog}\left[2,1+\frac{e x^{1/3}}{d}\right]}{20 d^6}-$$
$$\frac{3 b^2 e^6 n^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^n\right]\right) \text{PolyLog}\left[2,1+\frac{e x^{1/3}}{d}\right]}{d^6}+\frac{3 b^3 e^6 n^3 \text{PolyLog}\left[3,1+\frac{e x^{1/3}}{d}\right]}{d^6}$$

Problem 471: Result valid but suboptimal antiderivative.

$$\int x^3 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2 \, dx$$

Optimal (type 3, 482 leaves, 8 steps):

$$\frac{15 b^2 d^4 n^2 \left(d+e x^{2/3}\right)^2}{8 e^6}-\frac{10 b^2 d^3 n^2 \left(d+e x^{2/3}\right)^3}{9 e^6}+\frac{15 b^2 d^2 n^2 \left(d+e x^{2/3}\right)^4}{32 e^6}-\frac{3 b^2 d n^2 \left(d+e x^{2/3}\right)^5}{25 e^6}+\frac{b^2 n^2 \left(d+e x^{2/3}\right)^6}{72 e^6}-\frac{3 b^2 d^5 n^2 x^{2/3}}{e^5}+\frac{b^2 d^6 n^2 \text{Log}\left[d+e x^{2/3}\right]^2}{4 e^6}+\frac{3 b d^5 n \left(d+e x^{2/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{e^6}-\frac{15 b d^4 n \left(d+e x^{2/3}\right)^2 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{4 e^6}+\frac{10 b d^3 n \left(d+e x^{2/3}\right)^3 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{3 e^6}-\frac{15 b d^2 n \left(d+e x^{2/3}\right)^4 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{8 e^6}+\frac{3 b d n \left(d+e x^{2/3}\right)^5 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{5 e^6}-\frac{b n \left(d+e x^{2/3}\right)^6 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{12 e^6}-\frac{b d^6 n \text{Log}\left[d+e x^{2/3}\right] \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{2 e^6}+\frac{1}{4} x^4 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2$$

Result (type 3, 355 leaves, 8 steps):

$$\frac{15 b^2 d^4 n^2 \left(d+e x^{2/3}\right)^2}{8 e^6}-\frac{10 b^2 d^3 n^2 \left(d+e x^{2/3}\right)^3}{9 e^6}+\frac{15 b^2 d^2 n^2 \left(d+e x^{2/3}\right)^4}{32 e^6}-\frac{3 b^2 d n^2 \left(d+e x^{2/3}\right)^5}{25 e^6}+\frac{b^2 n^2 \left(d+e x^{2/3}\right)^6}{72 e^6}-\frac{3 b^2 d^5 n^2 x^{2/3}}{e^5}+\frac{b^2 d^6 n^2 \text{Log}\left[d+e x^{2/3}\right]^2}{4 e^6}+\frac{1}{120} b n \left(\frac{360 d^5 \left(d+e x^{2/3}\right)}{e^6}-\frac{450 d^4 \left(d+e x^{2/3}\right)^2}{e^6}+\frac{400 d^3 \left(d+e x^{2/3}\right)^3}{e^6}-\frac{225 d^2 \left(d+e x^{2/3}\right)^4}{e^6}+\frac{72 d \left(d+e x^{2/3}\right)^5}{e^6}-\frac{10 \left(d+e x^{2/3}\right)^6}{e^6}-\frac{60 d^6 \text{Log}\left[d+e x^{2/3}\right]}{e^6}\right) \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)+\frac{1}{4} x^4 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2$$

Problem 472: Result valid but suboptimal antiderivative.

$$\int x \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2 \, dx$$

Optimal (type 3, 275 leaves, 8 steps):

$$-\frac{3 b^2 d n^2 \left(d+e x^{2/3}\right)^2}{4 e^3}+\frac{b^2 n^2 \left(d+e x^{2/3}\right)^3}{9 e^3}+\frac{3 b^2 d^2 n^2 x^{2/3}}{e^2}-\frac{b^2 d^3 n^2 \text{Log}\left[d+e x^{2/3}\right]^2}{2 e^3}-\frac{3 b d^2 n \left(d+e x^{2/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{e^3}+\frac{3 b d n \left(d+e x^{2/3}\right)^2 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{2 e^3}-\frac{b n \left(d+e x^{2/3}\right)^3 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{3 e^3}+\frac{b d^3 n \text{Log}\left[d+e x^{2/3}\right] \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{e^3}+\frac{1}{2} x^2 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2$$

Result (type 3, 217 leaves, 8 steps):

$$-\frac{3 b^2 d n^2 \left(d+e x^{2/3}\right)^2}{4 e^3}+\frac{b^2 n^2 \left(d+e x^{2/3}\right)^3}{9 e^3}+\frac{3 b^2 d^2 n^2 x^{2/3}}{e^2}-\frac{b^2 d^3 n^2 \text{Log}\left[d+e x^{2/3}\right]^2}{2 e^3}-\frac{1}{6} b n \left(\frac{18 d^2 \left(d+e x^{2/3}\right)}{e^3}-\frac{9 d \left(d+e x^{2/3}\right)^2}{e^3}+\frac{2 \left(d+e x^{2/3}\right)^3}{e^3}-\frac{6 d^3 \text{Log}\left[d+e x^{2/3}\right]}{e^3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)+\frac{1}{2} x^2 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2$$

Problem 474: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{x^3} \, dx$$

Optimal (type 4, 238 leaves, 12 steps):

$$-\frac{b^2 e^2 n^2}{2 d^2 x^{2/3}}+\frac{b^2 e^3 n^2 \text{Log}\left[d+e x^{2/3}\right]}{2 d^3}-\frac{b e n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{2 d x^{4/3}}+\frac{b e^2 n \left(d+e x^{2/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{d^3 x^{2/3}}+\frac{b e^3 n \text{Log}\left[1-\frac{d}{d+e x^{2/3}}\right] \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{d^3}-\frac{\left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{2 x^2}-\frac{b^2 e^3 n^2 \text{Log}[x]}{d^3}-\frac{b^2 e^3 n^2 \text{PolyLog}\left[2,\frac{d}{d+e x^{2/3}}\right]}{d^3}$$

Result (type 4, 261 leaves, 14 steps):

$$-\frac{b^2 e^2 n^2}{2 d^2 x^{2/3}}+\frac{b^2 e^3 n^2 \text{Log}\left[d+e x^{2/3}\right]}{2 d^3}-\frac{b e n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{2 d x^{4/3}}+\frac{b e^2 n \left(d+e x^{2/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{d^3 x^{2/3}}-\frac{e^3 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{2 d^3}-\frac{\left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{2 x^2}+\frac{b e^3 n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right) \text{Log}\left[-\frac{e x^{2/3}}{d}\right]}{d^3}-\frac{b^2 e^3 n^2 \text{Log}[x]}{d^3}+\frac{b^2 e^3 n^2 \text{PolyLog}\left[2,1+\frac{e x^{2/3}}{d}\right]}{d^3}$$

Problem 475: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{x^5} \, dx$$

Optimal (type 4, 412 leaves, 24 steps):

$$-\frac{b^2 e^2 n^2}{40 d^2 x^{8/3}}+\frac{3 b^2 e^3 n^2}{40 d^3 x^2}-\frac{47 b^2 e^4 n^2}{240 d^4 x^{4/3}}+\frac{77 b^2 e^5 n^2}{120 d^5 x^{2/3}}-\frac{77 b^2 e^6 n^2 \text{Log}\left[d+e x^{2/3}\right]}{120 d^6}-\frac{b e n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{10 d x^{10/3}}+\frac{b e^2 n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{8 d^2 x^{8/3}}-\frac{b e^3 n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{6 d^3 x^2}+\frac{b e^4 n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{4 d^4 x^{4/3}}-\frac{b e^5 n \left(d+e x^{2/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{2 d^6 x^{2/3}}-\frac{b e^6 n \text{Log}\left[1-\frac{d}{d+e x^{2/3}}\right] \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{2 d^6}-\frac{\left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{4 x^4}+\frac{137 b^2 e^6 n^2 \text{Log}[x]}{180 d^6}+\frac{b^2 e^6 n^2 \text{PolyLog}\left[2,\frac{d}{d+e x^{2/3}}\right]}{2 d^6}$$

Result (type 4, 436 leaves, 26 steps):

$$-\frac{b^2 e^2 n^2}{40 d^2 x^{8/3}}+\frac{3 b^2 e^3 n^2}{40 d^3 x^2}-\frac{47 b^2 e^4 n^2}{240 d^4 x^{4/3}}+\frac{77 b^2 e^5 n^2}{120 d^5 x^{2/3}}-\frac{77 b^2 e^6 n^2 \text{Log}\left[d+e x^{2/3}\right]}{120 d^6}-\frac{b e n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{10 d x^{10/3}}+\frac{b e^2 n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{8 d^2 x^{8/3}}-\frac{b e^3 n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{6 d^3 x^2}+\frac{b e^4 n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{4 d^4 x^{4/3}}-\frac{b e^5 n \left(d+e x^{2/3}\right) \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{2 d^6 x^{2/3}}+\frac{e^6 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{4 d^6}-\frac{\left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{4 x^4}-\frac{b e^6 n \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right) \text{Log}\left[-\frac{e x^{2/3}}{d}\right]}{2 d^6}+\frac{137 b^2 e^6 n^2 \text{Log}[x]}{180 d^6}-\frac{b^2 e^6 n^2 \text{PolyLog}\left[2,1+\frac{e x^{2/3}}{d}\right]}{2 d^6}$$

Problem 484: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^3}{x^3} \, dx$$

Optimal (type 4, 451 leaves, 17 steps):

$$-\frac{3 b^2 e^2 n^2 \left(d+e x^{2/3}\right) \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{2 d^3 x^{2/3}}-\frac{3 b^2 e^3 n^2 \operatorname{Log}\left[1-\frac{d}{d+e x^{2/3}}\right] \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{2 d^3}-\frac{3 b e n \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{4 d x^{4/3}}+\frac{3 b e^2 n \left(d+e x^{2/3}\right) \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{2 d^3 x^{2/3}}+\frac{3 b e^3 n \operatorname{Log}\left[1-\frac{d}{d+e x^{2/3}}\right] \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{2 d^3}-\frac{\left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^3}{2 x^2}-\frac{3 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e x^{2/3}}{d}\right]}{d^3}+\frac{b^3 e^3 n^3 \operatorname{Log}[x]}{d^3}+\frac{3 b^3 e^3 n^3 \operatorname{PolyLog}\left[2, \frac{d}{d+e x^{2/3}}\right]}{2 d^3}-\frac{3 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{d}{d+e x^{2/3}}\right]}{d^3}-\frac{3 b^3 e^3 n^3 \operatorname{PolyLog}\left[2, 1+\frac{e x^{2/3}}{d}\right]}{d^3}-\frac{3 b^3 e^3 n^3 \operatorname{PolyLog}\left[3, \frac{d}{d+e x^{2/3}}\right]}{d^3}$$

Result (type 4, 428 leaves, 22 steps):

$$-\frac{3 b^2 e^2 n^2 \left(d+e x^{2/3}\right) \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)}{2 d^3 x^{2/3}}+\frac{3 b e^3 n \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{4 d^3}-\frac{3 b e n \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{4 d x^{4/3}}+\frac{3 b e^2 n \left(d+e x^{2/3}\right) \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2}{2 d^3 x^{2/3}}-\frac{e^3 \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^3}{2 d^3}-\frac{\left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^3}{2 x^2}-\frac{9 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e x^{2/3}}{d}\right]}{2 d^3}+\frac{3 b e^3 n \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right)^2 \operatorname{Log}\left[-\frac{e x^{2/3}}{d}\right]}{2 d^3}+\frac{b^3 e^3 n^3 \operatorname{Log}[x]}{d^3}-\frac{9 b^3 e^3 n^3 \operatorname{PolyLog}\left[2, 1+\frac{e x^{2/3}}{d}\right]}{2 d^3}+\frac{3 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+e x^{2/3}\right)^n\right]\right) \operatorname{PolyLog}\left[2, 1+\frac{e x^{2/3}}{d}\right]}{d^3}-\frac{3 b^3 e^3 n^3 \operatorname{PolyLog}\left[3, 1+\frac{e x^{2/3}}{d}\right]}{d^3}$$

Problem 497: Result valid but suboptimal antiderivative.

$$\int x^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 572 leaves, 36 steps):

$$\frac{481 b^2 e^8 n^2 x^{1/3}}{420 d^8} - \frac{341 b^2 e^7 n^2 x^{2/3}}{840 d^7} + \frac{743 b^2 e^6 n^2 x}{3780 d^6} - \frac{533 b^2 e^5 n^2 x^{4/3}}{5040 d^5} + \frac{73 b^2 e^4 n^2 x^{5/3}}{1260 d^4} - \frac{5 b^2 e^3 n^2 x^2}{168 d^3} +$$
$$\frac{b^2 e^2 n^2 x^{7/3}}{84 d^2} - \frac{481 b^2 e^9 n^2 \mathrm{Log}\left[d + \frac{e}{x^{1/3}}\right]}{420 d^9} - \frac{2 b e^8 n \left(d + \frac{e}{x^{1/3}}\right) x^{1/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{3 d^9} +$$
$$\frac{b e^7 n x^{2/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{3 d^7} - \frac{2 b e^6 n x \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{9 d^6} +$$
$$\frac{b e^5 n x^{4/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{6 d^5} - \frac{2 b e^4 n x^{5/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{15 d^4} +$$
$$\frac{b e^3 n x^2 \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{9 d^3} - \frac{2 b e^2 n x^{7/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{21 d^2} +$$
$$\frac{b e n x^{8/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{12 d} - \frac{2 b e^9 n \mathrm{Log}\left[1 - \frac{d}{d + \frac{e}{x^{1/3}}}\right] \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{3 d^9} +$$
$$\frac{1}{3} x^3 \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2 - \frac{761 b^2 e^9 n^2 \mathrm{Log}[x]}{1260 d^9} + \frac{2 b^2 e^9 n^2 \mathrm{PolyLog}\left[2, \frac{d}{d + \frac{e}{x^{1/3}}}\right]}{3 d^9}$$

Result (type 4, 596 leaves, 38 steps):

$$\frac{481 b^2 e^8 n^2 x^{1/3}}{420 d^8} - \frac{341 b^2 e^7 n^2 x^{2/3}}{840 d^7} + \frac{743 b^2 e^6 n^2 x}{3780 d^6} - \frac{533 b^2 e^5 n^2 x^{4/3}}{5040 d^5} +$$
$$\frac{73 b^2 e^4 n^2 x^{5/3}}{1260 d^4} - \frac{5 b^2 e^3 n^2 x^2}{168 d^3} + \frac{b^2 e^2 n^2 x^{7/3}}{84 d^2} - \frac{481 b^2 e^9 n^2 \mathrm{Log}\left[d + \frac{e}{x^{1/3}}\right]}{420 d^9} -$$
$$\frac{2 b e^8 n \left(d + \frac{e}{x^{1/3}}\right) x^{1/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{3 d^9} + \frac{b e^7 n x^{2/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{3 d^7} -$$
$$\frac{2 b e^6 n x \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{9 d^6} + \frac{b e^5 n x^{4/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{6 d^5} -$$
$$\frac{2 b e^4 n x^{5/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{15 d^4} + \frac{b e^3 n x^2 \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{9 d^3} -$$
$$\frac{2 b e^2 n x^{7/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{21 d^2} + \frac{b e n x^{8/3} \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{12 d} +$$
$$\frac{e^9 \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{3 d^9} + \frac{1}{3} x^3 \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2 -$$
$$\frac{2 b e^9 n \left(a + b \mathrm{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right) \mathrm{Log}\left[-\frac{e}{d x^{1/3}}\right]}{3 d^9} - \frac{761 b^2 e^9 n^2 \mathrm{Log}[x]}{1260 d^9} - \frac{2 b^2 e^9 n^2 \mathrm{PolyLog}\left[2, 1 + \frac{e}{d x^{1/3}}\right]}{3 d^9}$$

Problem 498: Result valid but suboptimal antiderivative.

$$\int x \left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 400 leaves, 24 steps):

$$-\frac{77\,b^2\,e^5\,n^2\,x^{1/3}}{60\,d^5}+\frac{47\,b^2\,e^4\,n^2\,x^{2/3}}{120\,d^4}-\frac{3\,b^2\,e^3\,n^2\,x}{20\,d^3}+\frac{b^2\,e^2\,n^2\,x^{4/3}}{20\,d^2}+\frac{77\,b^2\,e^6\,n^2\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]}{60\,d^6}+$$
$$\frac{b\,e^5\,n\left(d+\frac{e}{x^{1/3}}\right)x^{1/3}\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{d^6}-\frac{b\,e^4\,n\,x^{2/3}\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{2\,d^4}+$$
$$\frac{b\,e^3\,n\,x\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{3\,d^3}-\frac{b\,e^2\,n\,x^{4/3}\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{4\,d^2}+$$
$$\frac{b\,e\,n\,x^{5/3}\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{5\,d}+\frac{b\,e^6\,n\,\text{Log}\left[1-\frac{d}{d+\frac{e}{x^{1/3}}}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{d^6}+$$
$$\frac{1}{2}x^2\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2+\frac{137\,b^2\,e^6\,n^2\,\text{Log}[x]}{180\,d^6}-\frac{b^2\,e^6\,n^2\,\text{PolyLog}\left[2,\frac{d}{d+\frac{e}{x^{1/3}}}\right]}{d^6}$$

Result (type 4, 423 leaves, 26 steps):

$$-\frac{77\,b^2\,e^5\,n^2\,x^{1/3}}{60\,d^5}+\frac{47\,b^2\,e^4\,n^2\,x^{2/3}}{120\,d^4}-\frac{3\,b^2\,e^3\,n^2\,x}{20\,d^3}+\frac{b^2\,e^2\,n^2\,x^{4/3}}{20\,d^2}+$$
$$\frac{77\,b^2\,e^6\,n^2\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]}{60\,d^6}+\frac{b\,e^5\,n\left(d+\frac{e}{x^{1/3}}\right)x^{1/3}\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{d^6}-$$
$$\frac{b\,e^4\,n\,x^{2/3}\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{2\,d^4}+\frac{b\,e^3\,n\,x\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{3\,d^3}-$$
$$\frac{b\,e^2\,n\,x^{4/3}\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{4\,d^2}+\frac{b\,e\,n\,x^{5/3}\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{5\,d}-$$
$$\frac{e^6\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{2\,d^6}+\frac{1}{2}x^2\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2+$$
$$\frac{b\,e^6\,n\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)\text{Log}\left[-\frac{e}{d\,x^{1/3}}\right]}{d^6}+\frac{137\,b^2\,e^6\,n^2\,\text{Log}[x]}{180\,d^6}+\frac{b^2\,e^6\,n^2\,\text{PolyLog}\left[2,1+\frac{e}{d\,x^{1/3}}\right]}{d^6}$$

Problem 499: Result valid but suboptimal antiderivative.

$$\int\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 227 leaves, 13 steps):

$$\frac{b^2 e^2 n^2 x^{1/3}}{d^2}-\frac{b^2 e^3 n^2 \operatorname{Log}\left[d+\frac{e}{x^{1/3}}\right]}{d^3}-\frac{2 b e^2 n \left(d+\frac{e}{x^{1/3}}\right) x^{1/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{d^3}+$$
$$\frac{b e n x^{2/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{d}-\frac{2 b e^3 n \operatorname{Log}\left[1-\frac{d}{d+\frac{e}{x^{1/3}}}\right] \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{d^3}+$$
$$x \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2-\frac{b^2 e^3 n^2 \operatorname{Log}[x]}{d^3}+\frac{2 b^2 e^3 n^2 \operatorname{PolyLog}\left[2,\frac{d}{d+\frac{e}{x^{1/3}}}\right]}{d^3}$$

Result (type 4, 248 leaves, 15 steps):

$$\frac{b^2 e^2 n^2 x^{1/3}}{d^2}-\frac{b^2 e^3 n^2 \operatorname{Log}\left[d+\frac{e}{x^{1/3}}\right]}{d^3}-\frac{2 b e^2 n \left(d+\frac{e}{x^{1/3}}\right) x^{1/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{d^3}+$$
$$\frac{b e n x^{2/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{d}+\frac{e^3 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{d^3}+x \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2-$$
$$\frac{2 b e^3 n \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e}{d x^{1/3}}\right]}{d^3}-\frac{b^2 e^3 n^2 \operatorname{Log}[x]}{d^3}-\frac{2 b^2 e^3 n^2 \operatorname{PolyLog}\left[2,1+\frac{e}{d x^{1/3}}\right]}{d^3}$$

Problem 501: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{x^2} \, dx$$

Optimal (type 3, 269 leaves, 8 steps):

$$\frac{3 b^2 d n^2 \left(d+\frac{e}{x^{1/3}}\right)^2}{2 e^3}-\frac{2 b^2 n^2 \left(d+\frac{e}{x^{1/3}}\right)^3}{9 e^3}-\frac{6 b^2 d^2 n^2}{e^2 x^{1/3}}+$$
$$\frac{b^2 d^3 n^2 \operatorname{Log}\left[d+\frac{e}{x^{1/3}}\right]^2}{e^3}+\frac{6 b d^2 n \left(d+\frac{e}{x^{1/3}}\right) \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{e^3}-$$
$$\frac{3 b d n \left(d+\frac{e}{x^{1/3}}\right)^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{e^3}+\frac{2 b n \left(d+\frac{e}{x^{1/3}}\right)^3 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{3 e^3}-$$
$$\frac{2 b d^3 n \operatorname{Log}\left[d+\frac{e}{x^{1/3}}\right] \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{e^3}-\frac{\left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{x}$$

Result (type 3, 212 leaves, 8 steps):

$$\frac{3 b^2 d n^2 \left(d+\frac{e}{x^{1/3}}\right)^2}{2 e^3}-\frac{2 b^2 n^2 \left(d+\frac{e}{x^{1/3}}\right)^3}{9 e^3}-\frac{6 b^2 d^2 n^2}{e^2 x^{1/3}}+\frac{b^2 d^3 n^2 \operatorname{Log}\left[d+\frac{e}{x^{1/3}}\right]^2}{e^3}+$$
$$\frac{1}{3} b n \left(\frac{18 d^2 \left(d+\frac{e}{x^{1/3}}\right)}{e^3}-\frac{9 d \left(d+\frac{e}{x^{1/3}}\right)^2}{e^3}+\frac{2 \left(d+\frac{e}{x^{1/3}}\right)^3}{e^3}-\frac{6 d^3 \operatorname{Log}\left[d+\frac{e}{x^{1/3}}\right]}{e^3}\right)$$
$$\left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)-\frac{\left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{x}$$

Problem 502: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{x^3} \, dx$$

Optimal (type 3, 479 leaves, 8 steps):

$$-\frac{15 b^2 d^4 n^2 \left(d+\frac{e}{x^{1/3}}\right)^2}{4 e^6}+\frac{20 b^2 d^3 n^2 \left(d+\frac{e}{x^{1/3}}\right)^3}{9 e^6}-\frac{15 b^2 d^2 n^2 \left(d+\frac{e}{x^{1/3}}\right)^4}{16 e^6}+$$
$$\frac{6 b^2 d n^2 \left(d+\frac{e}{x^{1/3}}\right)^5}{25 e^6}-\frac{b^2 n^2 \left(d+\frac{e}{x^{1/3}}\right)^6}{36 e^6}+\frac{6 b^2 d^5 n^2}{e^5 x^{1/3}}-\frac{b^2 d^6 n^2 \operatorname{Log}\left[d+\frac{e}{x^{1/3}}\right]^2}{2 e^6}-$$
$$\frac{6 b d^5 n \left(d+\frac{e}{x^{1/3}}\right) \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{e^6}+\frac{15 b d^4 n \left(d+\frac{e}{x^{1/3}}\right)^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{2 e^6}-$$
$$\frac{20 b d^3 n \left(d+\frac{e}{x^{1/3}}\right)^3 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{3 e^6}+\frac{15 b d^2 n \left(d+\frac{e}{x^{1/3}}\right)^4 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{4 e^6}-$$
$$\frac{6 b d n \left(d+\frac{e}{x^{1/3}}\right)^5 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{5 e^6}+\frac{b n \left(d+\frac{e}{x^{1/3}}\right)^6 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{6 e^6}+$$
$$\frac{b d^6 n \operatorname{Log}\left[d+\frac{e}{x^{1/3}}\right] \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{e^6}-\frac{\left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{2 x^2}$$

Result (type 3, 355 leaves, 8 steps):

$$-\frac{15\, b^2\, d^4\, n^2\, \left(d+\frac{e}{x^{1/3}}\right)^2}{4\, e^6}+\frac{20\, b^2\, d^3\, n^2\, \left(d+\frac{e}{x^{1/3}}\right)^3}{9\, e^6}-\frac{15\, b^2\, d^2\, n^2\, \left(d+\frac{e}{x^{1/3}}\right)^4}{16\, e^6}+$$

$$\frac{6\, b^2\, d\, n^2\, \left(d+\frac{e}{x^{1/3}}\right)^5}{25\, e^6}-\frac{b^2\, n^2\, \left(d+\frac{e}{x^{1/3}}\right)^6}{36\, e^6}+\frac{6\, b^2\, d^5\, n^2}{e^5\, x^{1/3}}-\frac{b^2\, d^6\, n^2\, \text{Log}\left[d+\frac{e}{x^{1/3}}\right]^2}{2\, e^6}-$$

$$\frac{1}{60}\, b\, n\, \left(\frac{360\, d^5\, \left(d+\frac{e}{x^{1/3}}\right)}{e^6}-\frac{450\, d^4\, \left(d+\frac{e}{x^{1/3}}\right)^2}{e^6}+\frac{400\, d^3\, \left(d+\frac{e}{x^{1/3}}\right)^3}{e^6}-\frac{225\, d^2\, \left(d+\frac{e}{x^{1/3}}\right)^4}{e^6}+\frac{72\, d\, \left(d+\frac{e}{x^{1/3}}\right)^5}{e^6}-\right.$$

$$\left.\frac{10\, \left(d+\frac{e}{x^{1/3}}\right)^6}{e^6}-\frac{60\, d^6\, \text{Log}\left[d+\frac{e}{x^{1/3}}\right]}{e^6}\right)\, \left(a+b\, \text{Log}\left[c\, \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)-\frac{\left(a+b\, \text{Log}\left[c\, \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{2\, x^2}$$

Problem 503: Result valid but suboptimal antiderivative.

$$\int x\, \left(a+b\, \text{Log}\left[c\, \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^3\, dx$$

Optimal (type 4, 759 leaves, 62 steps) :

$$\frac{71 b^3 e^5 n^3 x^{1/3}}{40 d^5} - \frac{3 b^3 e^4 n^3 x^{2/3}}{10 d^4} + \frac{b^3 e^3 n^3 x}{20 d^3} -$$

$$\frac{71 b^3 e^6 n^3 \text{Log}\left[d + \frac{e}{x^{1/3}}\right]}{40 d^6} - \frac{77 b^2 e^5 n^2 \left(d + \frac{e}{x^{1/3}}\right) x^{1/3} \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{20 d^6} +$$

$$\frac{47 b^2 e^4 n^2 x^{2/3} \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{40 d^4} - \frac{9 b^2 e^3 n^2 x \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{20 d^3} +$$

$$\frac{3 b^2 e^2 n^2 x^{4/3} \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{20 d^2} - \frac{77 b^2 e^6 n^2 \text{Log}\left[1 - \frac{d}{d + \frac{e}{x^{1/3}}}\right] \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{20 d^6} +$$

$$\frac{3 b e^5 n \left(d + \frac{e}{x^{1/3}}\right) x^{1/3} \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{2 d^6} -$$

$$\frac{3 b e^4 n x^{2/3} \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{4 d^4} + \frac{b e^3 n x \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{2 d^3} -$$

$$\frac{3 b e^2 n x^{4/3} \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{8 d^2} + \frac{3 b e n x^{5/3} \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{10 d} +$$

$$\frac{3 b e^6 n \text{Log}\left[1 - \frac{d}{d + \frac{e}{x^{1/3}}}\right] \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{2 d^6} + \frac{1}{2} x^2 \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^3 -$$

$$\frac{3 b^2 e^6 n^2 \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right) \text{Log}\left[-\frac{e}{d x^{1/3}}\right]}{d^6} - \frac{15 b^3 e^6 n^3 \text{Log}[x]}{8 d^6} +$$

$$\frac{77 b^3 e^6 n^3 \text{PolyLog}\left[2, \frac{d}{d + \frac{e}{x^{1/3}}}\right]}{20 d^6} - \frac{3 b^2 e^6 n^2 \left(a + b \text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right) \text{PolyLog}\left[2, \frac{d}{d + \frac{e}{x^{1/3}}}\right]}{d^6} -$$

$$\frac{3 b^3 e^6 n^3 \text{PolyLog}\left[2, 1 + \frac{e}{d x^{1/3}}\right]}{d^6} - \frac{3 b^3 e^6 n^3 \text{PolyLog}\left[3, \frac{d}{d + \frac{e}{x^{1/3}}}\right]}{d^6}$$

Result (type 4, 736 leaves, 73 steps) :

$$\frac{71\, b^3 e^5 n^3 x^{1/3}}{40\, d^5} - \frac{3\, b^3 e^4 n^3 x^{2/3}}{10\, d^4} + \frac{b^3 e^3 n^3 x}{20\, d^3} - \frac{71\, b^3 e^6 n^3 \text{Log}\left[d + \frac{e}{x^{1/3}}\right]}{40\, d^6} -$$

$$\frac{77\, b^2 e^5 n^2 \left(d + \frac{e}{x^{1/3}}\right) x^{1/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{20\, d^6} + \frac{47\, b^2 e^4 n^2 x^{2/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{40\, d^4} -$$

$$\frac{9\, b^2 e^3 n^2 x \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{20\, d^3} + \frac{3\, b^2 e^2 n^2 x^{4/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)}{20\, d^2} +$$

$$\frac{77\, b\, e^6 n \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{40\, d^6} + \frac{3\, b\, e^5 n \left(d + \frac{e}{x^{1/3}}\right) x^{1/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{2\, d^6} -$$

$$\frac{3\, b\, e^4 n\, x^{2/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{4\, d^4} + \frac{b\, e^3 n\, x \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{2\, d^3} -$$

$$\frac{3\, b\, e^2 n\, x^{4/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{8\, d^2} + \frac{3\, b\, e\, n\, x^{5/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2}{10\, d} -$$

$$\frac{e^6 \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^3}{2\, d^6} + \frac{1}{2} x^2 \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^3 -$$

$$\frac{137\, b^2 e^6 n^2 \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right) \text{Log}\left[-\frac{e}{d\, x^{1/3}}\right]}{20\, d^6} + \frac{3\, b\, e^6 n \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^2 \text{Log}\left[-\frac{e}{d\, x^{1/3}}\right]}{2\, d^6} -$$

$$\frac{15\, b^3 e^6 n^3 \text{Log}[x]}{8\, d^6} - \frac{137\, b^3 e^6 n^3 \text{PolyLog}\left[2, 1 + \frac{e}{d\, x^{1/3}}\right]}{20\, d^6} +$$

$$\frac{3\, b^2 e^6 n^2 \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right) \text{PolyLog}\left[2, 1 + \frac{e}{d\, x^{1/3}}\right]}{d^6} - \frac{3\, b^3 e^6 n^3 \text{PolyLog}\left[3, 1 + \frac{e}{d\, x^{1/3}}\right]}{d^6}$$

Problem 504: Result valid but suboptimal antiderivative.

$$\int \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{1/3}}\right)^n\right]\right)^3 dx$$

Optimal (type 4, 436 leaves, 18 steps) :

$$\frac{3 b^2 e^2 n^2 \left(d+\frac{e}{x^{1/3}}\right) x^{1/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{d^3}+\frac{3 b^2 e^3 n^2 \operatorname{Log}\left[1-\frac{d}{d+\frac{e}{x^{1/3}}}\right] \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{d^3}-$$
$$\frac{3 b e^2 n \left(d+\frac{e}{x^{1/3}}\right) x^{1/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{d^3}+\frac{3 b e n x^{2/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{2 d}-$$
$$\frac{3 b e^3 n \operatorname{Log}\left[1-\frac{d}{d+\frac{e}{x^{1/3}}}\right] \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{d^3}+x \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^3+$$
$$\frac{6 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e}{d x^{1/3}}\right]}{d^3}+\frac{b^3 e^3 n^3 \operatorname{Log}[x]}{d^3}-$$
$$\frac{3 b^3 e^3 n^3 \operatorname{PolyLog}\left[2, \frac{d}{d+\frac{e}{x^{1/3}}}\right]}{d^3}+\frac{6 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{d}{d+\frac{e}{x^{1/3}}}\right]}{d^3}+$$
$$\frac{6 b^3 e^3 n^3 \operatorname{PolyLog}\left[2, 1+\frac{e}{d x^{1/3}}\right]}{d^3}+\frac{6 b^3 e^3 n^3 \operatorname{PolyLog}\left[3, \frac{d}{d+\frac{e}{x^{1/3}}}\right]}{d^3}$$

Result (type 4, 410 leaves, 23 steps):

$$\frac{3 b^2 e^2 n^2 \left(d+\frac{e}{x^{1/3}}\right) x^{1/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)}{d^3}-$$
$$\frac{3 b e^3 n \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{2 d^3}-\frac{3 b e^2 n \left(d+\frac{e}{x^{1/3}}\right) x^{1/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{d^3}+$$
$$\frac{3 b e n x^{2/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{2 d}+\frac{e^3 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^3}{d^3}+$$
$$x \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^3+\frac{9 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e}{d x^{1/3}}\right]}{d^3}-$$
$$\frac{3 b e^3 n \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2 \operatorname{Log}\left[-\frac{e}{d x^{1/3}}\right]}{d^3}+\frac{b^3 e^3 n^3 \operatorname{Log}[x]}{d^3}+\frac{9 b^3 e^3 n^3 \operatorname{PolyLog}\left[2, 1+\frac{e}{d x^{1/3}}\right]}{d^3}-$$
$$\frac{6 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{1/3}}\right)^n\right]\right) \operatorname{PolyLog}\left[2, 1+\frac{e}{d x^{1/3}}\right]}{d^3}+\frac{6 b^3 e^3 n^3 \operatorname{PolyLog}\left[3, 1+\frac{e}{d x^{1/3}}\right]}{d^3}$$

Problem 516: Result valid but suboptimal antiderivative.

$$\int x^3 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 412 leaves, 24 steps):

$$-\frac{77 b^2 e^5 n^2 x^{2/3}}{120 d^5}+\frac{47 b^2 e^4 n^2 x^{4/3}}{240 d^4}-\frac{3 b^2 e^3 n^2 x^2}{40 d^3}+\frac{b^2 e^2 n^2 x^{8/3}}{40 d^2}+\frac{77 b^2 e^6 n^2 \text{Log}\left[d+\frac{e}{x^{2/3}}\right]}{120 d^6}+\frac{b e^5 n \left(d+\frac{e}{x^{2/3}}\right) x^{2/3} \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{2 d^6}-\frac{b e^4 n x^{4/3} \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{4 d^4}+\frac{b e^3 n x^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{6 d^3}-\frac{b e^2 n x^{8/3} \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{8 d^2}+\frac{b e n x^{10/3} \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{10 d}+\frac{b e^6 n \text{Log}\left[1-\frac{d}{d+\frac{e}{x^{2/3}}}\right] \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{2 d^6}+\frac{1}{4} x^4 \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2+\frac{137 b^2 e^6 n^2 \text{Log}[x]}{180 d^6}-\frac{b^2 e^6 n^2 \text{PolyLog}\left[2,\frac{d}{d+\frac{e}{x^{2/3}}}\right]}{2 d^6}$$

Result (type 4, 436 leaves, 26 steps):

$$-\frac{77 b^2 e^5 n^2 x^{2/3}}{120 d^5}+\frac{47 b^2 e^4 n^2 x^{4/3}}{240 d^4}-\frac{3 b^2 e^3 n^2 x^2}{40 d^3}+\frac{b^2 e^2 n^2 x^{8/3}}{40 d^2}+\frac{77 b^2 e^6 n^2 \text{Log}\left[d+\frac{e}{x^{2/3}}\right]}{120 d^6}+\frac{b e^5 n \left(d+\frac{e}{x^{2/3}}\right) x^{2/3} \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{2 d^6}-\frac{b e^4 n x^{4/3} \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{4 d^4}+\frac{b e^3 n x^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{6 d^3}-\frac{b e^2 n x^{8/3} \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{8 d^2}+\frac{b e n x^{10/3} \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{10 d}-\frac{e^6 \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{4 d^6}+\frac{1}{4} x^4 \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2+\frac{b e^6 n \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right) \text{Log}\left[-\frac{e}{d x^{2/3}}\right]}{2 d^6}+\frac{137 b^2 e^6 n^2 \text{Log}[x]}{180 d^6}+\frac{b^2 e^6 n^2 \text{PolyLog}\left[2,1+\frac{e}{d x^{2/3}}\right]}{2 d^6}$$

Problem 517: Result valid but suboptimal antiderivative.

$$\int x \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 239 leaves, 12 steps):

$$\frac{b^2 e^2 n^2 x^{2/3}}{2 d^2}-\frac{b^2 e^3 n^2 \operatorname{Log}\left[d+\frac{e}{x^{2/3}}\right]}{2 d^3}-\frac{b e^2 n \left(d+\frac{e}{x^{2/3}}\right) x^{2/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{d^3}+$$
$$\frac{b e n x^{4/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{2 d}-\frac{b e^3 n \operatorname{Log}\left[1-\frac{d}{d+\frac{e}{x^{2/3}}}\right] \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{d^3}+$$
$$\frac{1}{2} x^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2-\frac{b^2 e^3 n^2 \operatorname{Log}[x]}{d^3}+\frac{b^2 e^3 n^2 \operatorname{PolyLog}\left[2, \frac{d}{d+\frac{e}{x^{2/3}}}\right]}{d^3}$$

Result (type 4, 264 leaves, 14 steps):

$$\frac{b^2 e^2 n^2 x^{2/3}}{2 d^2}-\frac{b^2 e^3 n^2 \operatorname{Log}\left[d+\frac{e}{x^{2/3}}\right]}{2 d^3}-\frac{b e^2 n \left(d+\frac{e}{x^{2/3}}\right) x^{2/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{d^3}+$$
$$\frac{b e n x^{4/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{2 d}+\frac{e^3 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{2 d^3}+$$
$$\frac{1}{2} x^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2-\frac{b e^3 n \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e}{d x^{2/3}}\right]}{d^3}-$$
$$\frac{b^2 e^3 n^2 \operatorname{Log}[x]}{d^3}-\frac{b^2 e^3 n^2 \operatorname{PolyLog}\left[2, 1+\frac{e}{d x^{2/3}}\right]}{d^3}$$

Problem 519: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{x^3} \, dx$$

Optimal (type 3, 276 leaves, 8 steps):

$$\frac{3 b^2 d n^2 \left(d+\frac{e}{x^{2/3}}\right)^2}{4 e^3}-\frac{b^2 n^2 \left(d+\frac{e}{x^{2/3}}\right)^3}{9 e^3}-\frac{3 b^2 d^2 n^2}{e^2 x^{2/3}}+$$
$$\frac{b^2 d^3 n^2 \operatorname{Log}\left[d+\frac{e}{x^{2/3}}\right]^2}{2 e^3}+\frac{3 b d^2 n \left(d+\frac{e}{x^{2/3}}\right) \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{e^3}-$$
$$\frac{3 b d n \left(d+\frac{e}{x^{2/3}}\right)^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{2 e^3}+\frac{b n \left(d+\frac{e}{x^{2/3}}\right)^3 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{3 e^3}-$$
$$\frac{b d^3 n \operatorname{Log}\left[d+\frac{e}{x^{2/3}}\right] \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{e^3}-\frac{\left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{2 x^2}$$

Result (type 3, 217 leaves, 8 steps):

$$\frac{3 b^2 d n^2 \left(d+\frac{e}{x^{2/3}}\right)^2}{4 e^3}-\frac{b^2 n^2 \left(d+\frac{e}{x^{2/3}}\right)^3}{9 e^3}-\frac{3 b^2 d^2 n^2}{e^2 x^{2/3}}+\frac{b^2 d^3 n^2 \text{Log}\left[d+\frac{e}{x^{2/3}}\right]^2}{2 e^3}+$$

$$\frac{1}{6} b n \left(\frac{18 d^2 \left(d+\frac{e}{x^{2/3}}\right)}{e^3}-\frac{9 d \left(d+\frac{e}{x^{2/3}}\right)^2}{e^3}+\frac{2 \left(d+\frac{e}{x^{2/3}}\right)^3}{e^3}-\frac{6 d^3 \text{Log}\left[d+\frac{e}{x^{2/3}}\right]}{e^3}\right)$$

$$\left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)-\frac{\left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{2 x^2}$$

Problem 520: Result valid but suboptimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{x^5}\,dx$$

Optimal (type 3, 482 leaves, 8 steps):

$$-\frac{15 b^2 d^4 n^2 \left(d+\frac{e}{x^{2/3}}\right)^2}{8 e^6}+\frac{10 b^2 d^3 n^2 \left(d+\frac{e}{x^{2/3}}\right)^3}{9 e^6}-\frac{15 b^2 d^2 n^2 \left(d+\frac{e}{x^{2/3}}\right)^4}{32 e^6}+$$

$$\frac{3 b^2 d n^2 \left(d+\frac{e}{x^{2/3}}\right)^5}{25 e^6}-\frac{b^2 n^2 \left(d+\frac{e}{x^{2/3}}\right)^6}{72 e^6}+\frac{3 b^2 d^5 n^2}{e^5 x^{2/3}}-\frac{b^2 d^6 n^2 \text{Log}\left[d+\frac{e}{x^{2/3}}\right]^2}{4 e^6}-$$

$$\frac{3 b d^5 n \left(d+\frac{e}{x^{2/3}}\right) \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{e^6}+\frac{15 b d^4 n \left(d+\frac{e}{x^{2/3}}\right)^2 \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{4 e^6}-$$

$$\frac{10 b d^3 n \left(d+\frac{e}{x^{2/3}}\right)^3 \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{3 e^6}+\frac{15 b d^2 n \left(d+\frac{e}{x^{2/3}}\right)^4 \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{8 e^6}-$$

$$\frac{3 b d n \left(d+\frac{e}{x^{2/3}}\right)^5 \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{5 e^6}+\frac{b n \left(d+\frac{e}{x^{2/3}}\right)^6 \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{12 e^6}+$$

$$\frac{b d^6 n \text{Log}\left[d+\frac{e}{x^{2/3}}\right] \left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{2 e^6}-\frac{\left(a+b \text{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{4 x^4}$$

Result (type 3, 355 leaves, 8 steps):

$$-\frac{15\,b^2\,d^4\,n^2\,\left(d+\frac{e}{x^{2/3}}\right)^2}{8\,e^6}+\frac{10\,b^2\,d^3\,n^2\,\left(d+\frac{e}{x^{2/3}}\right)^3}{9\,e^6}-\frac{15\,b^2\,d^2\,n^2\,\left(d+\frac{e}{x^{2/3}}\right)^4}{32\,e^6}+\frac{3\,b^2\,d\,n^2\,\left(d+\frac{e}{x^{2/3}}\right)^5}{25\,e^6}-\frac{b^2\,n^2\,\left(d+\frac{e}{x^{2/3}}\right)^6}{72\,e^6}+\frac{3\,b^2\,d^5\,n^2}{e^5\,x^{2/3}}-\frac{b^2\,d^6\,n^2\,\mathrm{Log}\left[d+\frac{e}{x^{2/3}}\right]^2}{4\,e^6}-\frac{1}{120}\,b\,n\left(\frac{360\,d^5\,\left(d+\frac{e}{x^{2/3}}\right)}{e^6}-\frac{450\,d^4\,\left(d+\frac{e}{x^{2/3}}\right)^2}{e^6}+\frac{400\,d^3\,\left(d+\frac{e}{x^{2/3}}\right)^3}{e^6}-\frac{225\,d^2\,\left(d+\frac{e}{x^{2/3}}\right)^4}{e^6}+\frac{72\,d\,\left(d+\frac{e}{x^{2/3}}\right)^5}{e^6}-\frac{10\,\left(d+\frac{e}{x^{2/3}}\right)^6}{e^6}-\frac{60\,d^6\,\mathrm{Log}\left[d+\frac{e}{x^{2/3}}\right]}{e^6}\right)\left(a+b\,\mathrm{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)-\frac{\left(a+b\,\mathrm{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{4\,x^4}$$

Problem 524: Result valid but suboptimal antiderivative.

$$\int x^3\,\left(a+b\,\mathrm{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^3\,dx$$

Optimal (type 4, 773 leaves, 62 steps) :

$$\frac{71\,b^3\,e^5\,n^3\,x^{2/3}}{80\,d^5}-\frac{3\,b^3\,e^4\,n^3\,x^{4/3}}{20\,d^4}+\frac{b^3\,e^3\,n^3\,x^2}{40\,d^3}-$$

$$\frac{71\,b^3\,e^6\,n^3\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]}{80\,d^6}-\frac{77\,b^2\,e^5\,n^2\,\left(d+\frac{e}{x^{2/3}}\right)\,x^{2/3}\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{40\,d^6}+$$

$$\frac{47\,b^2\,e^4\,n^2\,x^{4/3}\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{80\,d^4}-\frac{9\,b^2\,e^3\,n^2\,x^2\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{40\,d^3}+$$

$$\frac{3\,b^2\,e^2\,n^2\,x^{8/3}\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{40\,d^2}-\frac{77\,b^2\,e^6\,n^2\,\text{Log}\left[1-\frac{d}{d+\frac{e}{x^{2/3}}}\right]\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{40\,d^6}+$$

$$\frac{3\,b\,e^5\,n\,\left(d+\frac{e}{x^{2/3}}\right)\,x^{2/3}\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{4\,d^6}-$$

$$\frac{3\,b\,e^4\,n\,x^{4/3}\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{8\,d^4}+\frac{b\,e^3\,n\,x^2\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{4\,d^3}-$$

$$\frac{3\,b\,e^2\,n\,x^{8/3}\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{16\,d^2}+\frac{3\,b\,e\,n\,x^{10/3}\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{20\,d}+$$

$$\frac{3\,b\,e^6\,n\,\text{Log}\left[1-\frac{d}{d+\frac{e}{x^{2/3}}}\right]\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{4\,d^6}+\frac{1}{4}\,x^4\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^3-$$

$$\frac{3\,b^2\,e^6\,n^2\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)\,\text{Log}\left[-\frac{e}{d\,x^{2/3}}\right]}{2\,d^6}-\frac{15\,b^3\,e^6\,n^3\,\text{Log}[x]}{8\,d^6}+$$

$$\frac{77\,b^3\,e^6\,n^3\,\text{PolyLog}\left[2,\frac{d}{d+\frac{e}{x^{2/3}}}\right]}{40\,d^6}-\frac{3\,b^2\,e^6\,n^2\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)\,\text{PolyLog}\left[2,\frac{d}{d+\frac{e}{x^{2/3}}}\right]}{2\,d^6}-$$

$$\frac{3\,b^3\,e^6\,n^3\,\text{PolyLog}\left[2,1+\frac{e}{d\,x^{2/3}}\right]}{2\,d^6}-\frac{3\,b^3\,e^6\,n^3\,\text{PolyLog}\left[3,\frac{d}{d+\frac{e}{x^{2/3}}}\right]}{2\,d^6}$$

Result (type 4, 746 leaves, 73 steps) :

$$\frac{71\, b^3 e^5 n^3 x^{2/3}}{80\, d^5} - \frac{3\, b^3 e^4 n^3 x^{4/3}}{20\, d^4} + \frac{b^3 e^3 n^3 x^2}{40\, d^3} - \frac{71\, b^3 e^6 n^3 \,\text{Log}\left[d + \frac{e}{x^{2/3}}\right]}{80\, d^6} -$$
$$\frac{77\, b^2 e^5 n^2 \left(d + \frac{e}{x^{2/3}}\right) x^{2/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)}{40\, d^6} + \frac{47\, b^2 e^4 n^2 x^{4/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)}{80\, d^4} -$$
$$\frac{9\, b^2 e^3 n^2 x^2 \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)}{40\, d^3} + \frac{3\, b^2 e^2 n^2 x^{8/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)}{40\, d^2} +$$
$$\frac{77\, b\, e^6 n \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)^2}{80\, d^6} + \frac{3\, b\, e^5 n \left(d + \frac{e}{x^{2/3}}\right) x^{2/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)^2}{4\, d^6} -$$
$$\frac{3\, b\, e^4 n\, x^{4/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)^2}{8\, d^4} + \frac{b\, e^3 n\, x^2 \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)^2}{4\, d^3} -$$
$$\frac{3\, b\, e^2 n\, x^{8/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)^2}{16\, d^2} + \frac{3\, b\, e\, n\, x^{10/3} \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)^2}{20\, d} -$$
$$\frac{e^6 \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)^3}{4\, d^6} + \frac{1}{4} x^4 \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)^3 -$$
$$\frac{137\, b^2 e^6 n^2 \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right) \text{Log}\left[-\frac{e}{d\, x^{2/3}}\right]}{40\, d^6} + \frac{3\, b\, e^6 n \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)^2 \text{Log}\left[-\frac{e}{d\, x^{2/3}}\right]}{4\, d^6} -$$
$$\frac{15\, b^3 e^6 n^3 \,\text{Log}[x]}{8\, d^6} - \frac{137\, b^3 e^6 n^3 \,\text{PolyLog}\left[2, 1 + \frac{e}{d\, x^{2/3}}\right]}{40\, d^6} +$$
$$\frac{3\, b^2 e^6 n^2 \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right) \text{PolyLog}\left[2, 1 + \frac{e}{d\, x^{2/3}}\right]}{2\, d^6} - \frac{3\, b^3 e^6 n^3 \,\text{PolyLog}\left[3, 1 + \frac{e}{d\, x^{2/3}}\right]}{2\, d^6}$$

Problem 525: Result valid but suboptimal antiderivative.

$$\int x \left(a + b\,\text{Log}\left[c \left(d + \frac{e}{x^{2/3}}\right)^n\right]\right)^3 dx$$

Optimal (type 4, 451 leaves, 17 steps):

$$\frac{3 b^2 e^2 n^2 \left(d+\frac{e}{x^{2/3}}\right) x^{2/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{2 d^3}+\frac{3 b^2 e^3 n^2 \operatorname{Log}\left[1-\frac{d}{d+\frac{e}{x^{2/3}}}\right] \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{2 d^3}-$$
$$\frac{3 b e^2 n \left(d+\frac{e}{x^{2/3}}\right) x^{2/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{2 d^3}+\frac{3 b e n x^{4/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{4 d}-$$
$$\frac{3 b e^3 n \operatorname{Log}\left[1-\frac{d}{d+\frac{e}{x^{2/3}}}\right] \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{2 d^3}+\frac{1}{2} x^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^3+$$
$$\frac{3 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e}{d x^{2/3}}\right]}{d^3}+\frac{b^3 e^3 n^3 \operatorname{Log}[x]}{d^3}-$$
$$\frac{3 b^3 e^3 n^3 \operatorname{PolyLog}\left[2, \frac{d}{d+\frac{e}{x^{2/3}}}\right]}{2 d^3}+\frac{3 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{d}{d+\frac{e}{x^{2/3}}}\right]}{d^3}+$$
$$\frac{3 b^3 e^3 n^3 \operatorname{PolyLog}\left[2, 1+\frac{e}{d x^{2/3}}\right]}{d^3}+\frac{3 b^3 e^3 n^3 \operatorname{PolyLog}\left[3, \frac{d}{d+\frac{e}{x^{2/3}}}\right]}{d^3}$$

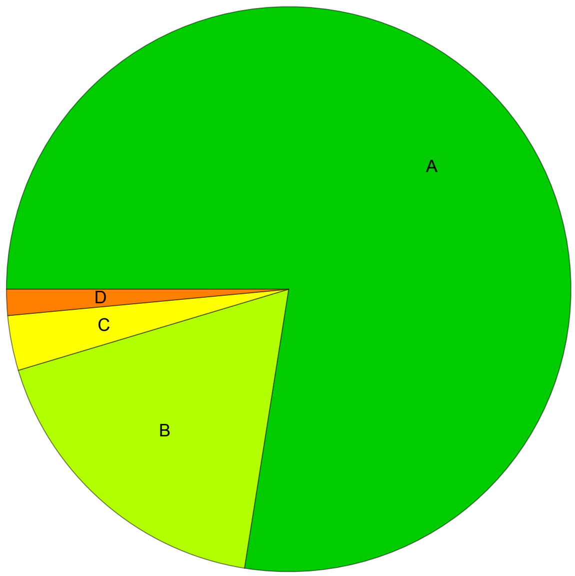
Result (type 4, 428 leaves, 22 steps):

$$\frac{3 b^2 e^2 n^2 \left(d+\frac{e}{x^{2/3}}\right) x^{2/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{2 d^3}-$$
$$\frac{3 b e^3 n \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{4 d^3}-\frac{3 b e^2 n \left(d+\frac{e}{x^{2/3}}\right) x^{2/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{2 d^3}+$$
$$\frac{3 b e n x^{4/3} \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{4 d}+\frac{e^3 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^3}{2 d^3}+$$
$$\frac{1}{2} x^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^3+\frac{9 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right) \operatorname{Log}\left[-\frac{e}{d x^{2/3}}\right]}{2 d^3}-$$
$$\frac{3 b e^3 n \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2 \operatorname{Log}\left[-\frac{e}{d x^{2/3}}\right]}{2 d^3}+\frac{b^3 e^3 n^3 \operatorname{Log}[x]}{d^3}+\frac{9 b^3 e^3 n^3 \operatorname{PolyLog}\left[2, 1+\frac{e}{d x^{2/3}}\right]}{2 d^3}-$$
$$\frac{3 b^2 e^3 n^2 \left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{x^{2/3}}\right)^n\right]\right) \operatorname{PolyLog}\left[2, 1+\frac{e}{d x^{2/3}}\right]}{d^3}+\frac{3 b^3 e^3 n^3 \operatorname{PolyLog}\left[3, 1+\frac{e}{d x^{2/3}}\right]}{d^3}$$

Test results for the 314 problems in "3.5 Logarithm functions.m"

Summary of Integration Test Results

3085 integration problems



A - 2391 optimal antiderivatives

B - 551 valid but suboptimal antiderivatives

C - 97 unnecessarily complex antiderivatives

D - 46 unable to integrate problems

E - 0 integration timeouts

F - 0 invalid antiderivatives