# *Mathematica* 7 Test Results

## For Integration Problems Involving Logarithms

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}\left[\frac{a}{x}\right]}{a\,x-x^2},\ x,\ 1,\ 0\right\}$$

$$\frac{\text{PolyLog}\left[2,\ 1-\frac{a}{x}\right]}{a}$$

$$\frac{1}{2\,a}\left(2\,\text{Log}\left[\frac{a}{x}\right]\,(\text{Log}[x]-\text{Log}[-a+x])+\text{Log}[x]\,\left(\text{Log}[x]-2\,\text{Log}[-a+x]+2\,\text{Log}\left[1-\frac{x}{a}\right]\right)+2\,\text{PolyLog}\left[2,\ \frac{x}{a}\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}\left[\frac{a}{x^2}\right]}{a\,x-x^3},\ x,\ 1,\ 0\right\}$$

$$\frac{\text{PolyLog}\left[2,\ 1-\frac{a}{x^2}\right]}{2\,a}$$

$$\frac{1}{2\,a}\left(2\,\text{Log}\left[\frac{a}{x^2}\right]\,\text{Log}[x]+2\,\text{Log}[x]^2+2\,\text{Log}[x]\,\text{Log}\left[1-\frac{x}{\sqrt{a}}\right]+2\,\text{Log}[x]\,\text{Log}\left[1+\frac{x}{\sqrt{a}}\right]-\text{Log}\left[\frac{a}{x^2}\right]\,\text{Log}\left[-a+x^2\right]-2\,\text{Log}[x]\,\text{Log}\left[-a+x^2\right]+2\,\text{PolyLog}\left[2,\ -\frac{x}{\sqrt{a}}\right]+2\,\text{PolyLog}\left[2,\ \frac{x}{\sqrt{a}}\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}\left[\frac{x}{a}\right]}{a-x},\ x,\ 1,\ 0\right\}$$

$$\text{PolyLog}\left[2,\ 1-\frac{x}{a}\right]$$

$$-\text{Log}\left[\frac{x}{a}\right]\,\text{Log}\left[1-\frac{x}{a}\right]-\text{PolyLog}\left[2,\ \frac{x}{a}\right]$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{x\,\text{Log}\left[\frac{x^2}{a}\right]}{a-x^2},\ x,\ 2,\ 0\right\}$$

$$\frac{1}{2}\,\text{PolyLog}\left[2,\ 1-\frac{x^2}{a}\right]$$

$$\frac{1}{2}\left(-\text{Log}\left[\frac{x^2}{a}\right]\,\text{Log}\left[1-\frac{x^2}{a}\right]-\text{PolyLog}\left[2,\ \frac{x^2}{a}\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{(a+b\,\text{Log}[c\,(d+e\,x)^n])^4,\ x,\ 5,\ 0\right\}$$

$$-24\,a\,b^3\,n^3\,x+24\,b^4\,n^4\,x-\frac{24\,b^4\,n^3\,(d+e\,x)\,\text{Log}[c\,(d+e\,x)^n]}{e}+\frac{12\,b^2\,n^2\,(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{e}-$$
$$\frac{4\,b\,n\,(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3}{e}+\frac{(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^4}{e}$$

$$\frac{1}{e}\Big(-b^4\,d\,n^4\,\text{Log}[d+e\,x]^4+4\,b^3\,d\,n^3\,\text{Log}[d+e\,x]^3\,(a-b\,n+b\,\text{Log}[c\,(d+e\,x)^n])-$$
$$6\,b^2\,d\,n^2\,\text{Log}[d+e\,x]^2\,\left(a^2-2\,a\,b\,n+2\,b^2\,n^2+2\,b\,(a-b\,n)\,\text{Log}[c\,(d+e\,x)^n]+b^2\,\text{Log}[c\,(d+e\,x)^n]^2\right)+$$
$$4\,b\,d\,n\,\text{Log}[d+e\,x]\,\Big(a^3-3\,a^2\,b\,n+6\,a\,b^2\,n^2-6\,b^3\,n^3+$$
$$3\,b\,\left(a^2-2\,a\,b\,n+2\,b^2\,n^2\right)\,\text{Log}[c\,(d+e\,x)^n]+3\,b^2\,(a-b\,n)\,\text{Log}[c\,(d+e\,x)^n]^2+b^3\,\text{Log}[c\,(d+e\,x)^n]^3\Big)+$$
$$e\,x\,\Big(a^4-4\,a^3\,b\,n+12\,a^2\,b^2\,n^2-24\,a\,b^3\,n^3+24\,b^4\,n^4+4\,b\,\left(a^3-3\,a^2\,b\,n+6\,a\,b^2\,n^2-6\,b^3\,n^3\right)\,\text{Log}[c\,(d+e\,x)^n]+$$
$$6\,b^2\,\left(a^2-2\,a\,b\,n+2\,b^2\,n^2\right)\,\text{Log}[c\,(d+e\,x)^n]^2+4\,b^3\,(a-b\,n)\,\text{Log}[c\,(d+e\,x)^n]^3+b^4\,\text{Log}[c\,(d+e\,x)^n]^4\Big)\Big)$$

Valid but unnecessarily complicated antiderivative:

$$\{(a+b\,\text{Log}[c\,(d+e\,x)^n])^3,\ x,\ 4,\ 0\}$$

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

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

Unable to integrate:

$$\{(a+b\,\text{Log}[c\,(d+e\,x)^n])^{5/2},\ x,\ 4,\ 0\}$$

$$-\frac{15\,b^{5/2}\,e^{-\frac{a}{b\,n}}\,n^{5/2}\,\sqrt{\pi}\,(d+e\,x)\,(c\,(d+e\,x)^n)^{-1/n}\,\text{Erfi}\left[\frac{\sqrt{a+b\,\text{Log}[c\,(d+e\,x)^n]}}{\sqrt{b}\,\sqrt{n}}\right]}{8\,e}+$$
$$\frac{15\,b^2\,n^2\,(d+e\,x)\,\sqrt{a+b\,\text{Log}[c\,(d+e\,x)^n]}}{4\,e}-\frac{5\,b\,n\,(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^{3/2}}{2\,e}+\frac{(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^{5/2}}{e}$$

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

Unable to integrate:

$$\{(a+b\,\text{Log}[c\,(d+e\,x)^n])^{3/2},\ x,\ 3,\ 0\}$$

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

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

Unable to integrate:

$$\left\{\sqrt{a+b\,\text{Log}[c\,(d+e\,x)^n]},\ x,\ 2,\ 0\right\}$$

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

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

Unable to integrate:

$$\left\{\left(a-b \text{Log}[c (d+e x)^n]\right)^{5/2}, x, 4, 0\right\}$$

$$-\frac{15 b^{5/2} e^{\frac{a}{b n}} n^{5/2} \sqrt{\pi}\, (d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{Erf}\left[\frac{\sqrt{a-b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right]}{8 e}+\frac{15 b^2 n^2 (d+e x) \sqrt{a-b \text{Log}[c (d+e x)^n]}}{4 e}+$$
$$\frac{5 b n (d+e x) \left(a-b \text{Log}[c (d+e x)^n]\right)^{3/2}}{2 e}+\frac{(d+e x) \left(a-b \text{Log}[c (d+e x)^n]\right)^{5/2}}{e}$$

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

Unable to integrate:

$$\left\{\left(a-b \text{Log}[c (d+e x)^n]\right)^{3/2}, x, 3, 0\right\}$$

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

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

Unable to integrate:

$$\left\{\sqrt{a-b \text{Log}[c (d+e x)^n]}, x, 2, 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[1+a x^n]}{x}, x, 1, 0\right\}$$

$$-\frac{\text{PolyLog}[2, -a x^n]}{n}$$

$$\frac{\text{Log}[-a x^n]\, \text{Log}[1+a x^n]+\text{PolyLog}[2, 1+a x^n]}{n}$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[x^{-n} (a+x^n)]}{x}, x, 2, 0\right\}$$

$$\frac{\text{PolyLog}[2, -a x^{-n}]}{n}$$

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[a + b x^2]^2}{x^3}, x, 4, 0\right\}$$

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

$$-\frac{\text{Log}[a + b x^2]^2}{2 x^2} -$$

$$\frac{1}{2 a} b \left(\text{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}} + x\right]^2 + \text{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}} + x\right]^2 + 2 \text{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}} + x\right] \text{Log}\left[\frac{1}{2} - \frac{i \sqrt{b}\, x}{2 \sqrt{a}}\right] + 2 \text{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}} + x\right] \text{Log}\left[\frac{1}{2} + \frac{i \sqrt{b}\, x}{2 \sqrt{a}}\right] + \right.$$

$$4 \text{Log}[x] \text{Log}\left[1 - \frac{i \sqrt{b}\, x}{\sqrt{a}}\right] + 4 \text{Log}[x] \text{Log}\left[1 + \frac{i \sqrt{b}\, x}{\sqrt{a}}\right] - 4 \text{Log}[x] \text{Log}[a + b x^2] -$$

$$2 \text{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}} + x\right] \text{Log}[a + b x^2] - 2 \text{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}} + x\right] \text{Log}[a + b x^2] + 2 \text{Log}[a + b x^2]^2 +$$

$$\left. 4 \text{PolyLog}\left[2, -\frac{i \sqrt{b}\, x}{\sqrt{a}}\right] + 4 \text{PolyLog}\left[2, \frac{i \sqrt{b}\, x}{\sqrt{a}}\right] + 2 \text{PolyLog}\left[2, \frac{1}{2} - \frac{i \sqrt{b}\, x}{2 \sqrt{a}}\right] + 2 \text{PolyLog}\left[2, \frac{1}{2} + \frac{i \sqrt{b}\, x}{2 \sqrt{a}}\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[c (a + b x^2)^n]^2}{x}, x, 5, 0\right\}$$

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

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

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[c (a + b x^2)^n]^2}{x^3}, x, 4, 0\right\}$$

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

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

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

$$\frac{1}{2\,a}\,b\left(\mathrm{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]^2+\mathrm{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]^2+2\,\mathrm{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\mathrm{Log}\left[\frac{1}{2}-\frac{i\sqrt{b}\,x}{2\sqrt{a}}\right]+2\,\mathrm{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\mathrm{Log}\left[\frac{1}{2}+\frac{i\sqrt{b}\,x}{2\sqrt{a}}\right]+\right.$$

$$4\,\mathrm{Log}[x]\,\mathrm{Log}\left[1-\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+4\,\mathrm{Log}[x]\,\mathrm{Log}\left[1+\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]-4\,\mathrm{Log}[x]\,\mathrm{Log}\left[a+b\,x^2\right]-2\,\mathrm{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\mathrm{Log}\left[a+b\,x^2\right]-$$

$$2\,\mathrm{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\mathrm{Log}\left[a+b\,x^2\right]+2\,\mathrm{Log}\left[a+b\,x^2\right]^2+4\,\mathrm{PolyLog}\left[2,-\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+$$

$$\left.\left.4\,\mathrm{PolyLog}\left[2,\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+2\,\mathrm{PolyLog}\left[2,\frac{1}{2}-\frac{i\sqrt{b}\,x}{2\sqrt{a}}\right]+2\,\mathrm{PolyLog}\left[2,\frac{1}{2}+\frac{i\sqrt{b}\,x}{2\sqrt{a}}\right]\right)\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\mathrm{Log}\left[c\left(a+b\,x^2\right)^n\right]^3}{x},\ x,\ 6,\ 0\right\}$$

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

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

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

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

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

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\mathrm{Log}\left[c\left(a+b\,x^2\right)^n\right]^3}{x^3},\ x,\ 6,\ 0\right\}$$

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

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

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

Unable to integrate:

$$\left\{\mathrm{Log}\left[\frac{c\,x}{b+a\,x}\right]^3,\ x,\ 6,\ 0\right\}$$

$$\frac{3\,b\,\mathrm{Log}\left[\frac{b}{b+a\,x}\right]\,\mathrm{Log}\left[\frac{c\,x}{b+a\,x}\right]^2}{a}+x\,\mathrm{Log}\left[\frac{c\,x}{b+a\,x}\right]^3+\frac{6\,b\,\mathrm{Log}\left[\frac{c\,x}{b+a\,x}\right]\,\mathrm{PolyLog}\left[2,\frac{a\,x}{b+a\,x}\right]}{a}-\frac{6\,b\,\mathrm{PolyLog}\left[3,\frac{a\,x}{b+a\,x}\right]}{a}$$

$$\int \mathrm{Log}\left[\frac{c\,x}{b+a\,x}\right]^3\,dx$$

Unable to integrate:

$$\left\{\mathrm{Log}\left[\frac{c\,(b+a\,x)^2}{x^2}\right]^3,\ x,\ 7,\ 0\right\}$$

$$\frac{(b+a\,x)\,\mathrm{Log}\left[c\,\left(a+\frac{b}{x}\right)^2\right]^3}{a}-\frac{6\,b\,\mathrm{Log}\left[c\,\left(a+\frac{b}{x}\right)^2\right]^2\,\mathrm{Log}\left[-\frac{b}{a\,x}\right]}{a}-\frac{24\,b\,\mathrm{Log}\left[c\,\left(a+\frac{b}{x}\right)^2\right]\,\mathrm{PolyLog}\left[2,1+\frac{b}{a\,x}\right]}{a}+\frac{48\,b\,\mathrm{PolyLog}\left[3,\frac{a+\frac{b}{x}}{a}\right]}{a}$$

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

Unable to integrate:

$$\left\{\mathrm{Log}\left[\frac{c\,x^2}{(b+a\,x)^2}\right]^3,\ x,\ 7,\ 0\right\}$$

$$\frac{(b+a\,x)\,\mathrm{Log}\left[\frac{c}{\left(a+\frac{b}{x}\right)^2}\right]^3}{a}+\frac{6\,b\,\mathrm{Log}\left[\frac{c}{\left(a+\frac{b}{x}\right)^2}\right]^2\,\mathrm{Log}\left[-\frac{b}{a\,x}\right]}{a}-\frac{24\,b\,\mathrm{Log}\left[\frac{c}{\left(a+\frac{b}{x}\right)^2}\right]\,\mathrm{PolyLog}\left[2,1+\frac{b}{a\,x}\right]}{a}-\frac{48\,b\,\mathrm{PolyLog}\left[3,\frac{a+\frac{b}{x}}{a}\right]}{a}$$

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\text{Log}\left[c\left(a+\frac{b}{x}\right)^n\right]^3,\ x,\ 6,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[1+b\,x^m]}{x},\ x,\ 1,\ 0\right\}$$

$$-\frac{\text{PolyLog}[2,-b\,x^m]}{m}$$

$$\frac{\text{Log}[-b\,x^m]\,\text{Log}[1+b\,x^m]+\text{PolyLog}[2,1+b\,x^m]}{m}$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}\left[c\,(a+b\,x^m)^n\right]^2}{x},\ x,\ 5,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}\left[c\,(a+b\,x^m)^n\right]^3}{x},\ x,\ 6,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[c (a+b x)^n]^2}{x}, x, 4, 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[c (a+b x)^n]^3}{x}, x, 5, 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[c (a+b x)^n]^3}{x^2}, x, 5, 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\operatorname{Log}\left[c (a+b x)^n\right]^3}{x^3}, x, 9, 0\right\}$$

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

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

Unable to integrate:

$$\left\{\frac{\operatorname{Log}\left[(c+d x)^2\right]^2}{a+b x}, x, 4, 0\right\}$$

$$\frac{\operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[(c+d x)^2\right]^2}{b}+\frac{4 \operatorname{Log}\left[(c+d x)^2\right] \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b}-\frac{8 \operatorname{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{b}$$

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

Unable to integrate:

$$\left\{\frac{\operatorname{Log}\left[(c+d x)^2\right]^2}{(a+b x)^2}, x, 6, 0\right\}$$

$$\frac{4 d \operatorname{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \operatorname{Log}\left[(c+d x)^2\right]}{b (b c-a d)}-\frac{d \operatorname{Log}\left[(c+d x)^2\right]^2}{b (b c-a d)}-\frac{\operatorname{Log}\left[(c+d x)^2\right]^2}{b (a+b x)}+\frac{8 d \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)}$$

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

Unable to integrate:

$$\left\{\frac{\operatorname{Log}\left[(c+d x)^2\right]^2}{(a+b x)^3}, x, 12, 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}\left[(c+d x)^3\right]^2}{a+b x}, x, 4, 0\right\}$$

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

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

Unable to integrate:

$$\left\{\frac{\text{Log}\left[(c+d x)^2\right]^3}{a+b x}, x, 5, 0\right\}$$

$$\frac{\text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^2\right]^3}{b}+\frac{6 \text{Log}\left[(c+d x)^2\right]^2 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b}-$$
$$\frac{24 \text{Log}\left[(c+d x)^2\right] \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{b}+\frac{48 \text{PolyLog}\left[4, \frac{b (c+d x)}{b c-a d}\right]}{b}$$

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

Unable to integrate:

$$\left\{\frac{\text{Log}\left[(c+d x)^2\right]^3}{(a+b x)^2}, x, 9, 0\right\}$$

$$\frac{6 d \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^2\right]^2}{b (b c-a d)}-\frac{d \text{Log}\left[(c+d x)^2\right]^3}{b (b c-a d)}-$$
$$\frac{\text{Log}\left[(c+d x)^2\right]^3}{b (a+b x)}+\frac{24 d \text{Log}\left[(c+d x)^2\right] \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)}-\frac{48 d \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)}$$

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

Unable to integrate:

$$\left\{\frac{\text{Log}\left[(c+d x)^2\right]^3}{(a+b x)^3}, x, 15, 0\right\}$$

$$\frac{12 d^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^2\right]}{b (b c-a d)^2}-\frac{3 d^2 \text{Log}\left[(c+d x)^2\right]^2}{b (b c-a d)^2}-\frac{3 d \text{Log}\left[(c+d x)^2\right]^2}{b (b c-a d) (a+b x)}-\frac{3 d^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^2\right]^2}{b (b c-a d)^2}+$$
$$\frac{d^2 \text{Log}\left[(c+d x)^2\right]^3}{2 b (b c-a d)^2}-\frac{\text{Log}\left[(c+d x)^2\right]^3}{2 b (a+b x)^2}+\frac{12 d^2 \left(2-\text{Log}\left[(c+d x)^2\right]\right) \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^2}+\frac{24 d^2 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)^2}$$

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

Unable to integrate:

$$\left\{\frac{\text{Log}\left[(c+d x)^3\right]^3}{a+b x}, x, 5, 0\right\}$$

$$\frac{\text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^3\right]^3}{b}+\frac{9 \text{Log}\left[(c+d x)^3\right]^2 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b}-$$
$$\frac{54 \text{Log}\left[(c+d x)^3\right] \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{b}+\frac{162 \text{PolyLog}\left[4, \frac{b (c+d x)}{b c-a d}\right]}{b}$$

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

Unable to integrate:

$$\left\{\frac{\text{Log}\left[(c+d x)^3\right]^3}{(a+b x)^2}, x, 9, 0\right\}$$

$$\frac{9 d \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}\left[(c+d x)^3\right]^2}{b (b c-a d)}-\frac{d \text{Log}\left[(c+d x)^3\right]^3}{b (b c-a d)}-$$
$$\frac{\text{Log}\left[(c+d x)^3\right]^3}{b (a+b x)}+\frac{54 d \text{Log}\left[(c+d x)^3\right] \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)}-\frac{162 d \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{b (b c-a d)}$$

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

Unable to integrate:

$$\left\{\frac{\text{Log}\left[(c+d x)^3\right]^3}{(a+b x)^3}, x, 15, 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[(c+d\,x)^n]^3}{a+b\,x},\ x,\ 5,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[(c+d\,x)^n]^3}{(a+b\,x)^2},\ x,\ 9,\ 0\right\}$$

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

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

Unable to integrate:

$$\left\{\frac{x^2\,\text{Log}[c+d\,x]}{a+b\,x^3},\ x,\ 4,\ 0\right\}$$

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

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

Unable to integrate:

$$\left\{\frac{x^2 \text{Log}[c+d x]}{a+b x^4}, x, 8, 0\right\}$$

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

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

Unable to integrate:

$$\left\{\frac{x^3 \text{Log}[c+d x]}{a+b x^4}, x, 5, 0\right\}$$

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

$$\int \frac{x^3 \text{Log}[c+d x]}{a+b x^4} \, dx$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}\left[c (a+b x)^n\right]^3}{d x+e x^2}, x, 12, 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2}{x},\,x,\,9,\,0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{Log}[x]}{\sqrt{a+b\,\text{Log}[x]}},\,x,\,4,\,0\right\}$$

$$-\frac{(2\,a+b)\,e^{-\frac{a}{b}}\,\sqrt{\pi}\,\text{Erfi}\left[\frac{\sqrt{a+b\,\text{Log}[x]}}{\sqrt{b}}\right]}{2\,b^{3/2}}+\frac{x\,\sqrt{a+b\,\text{Log}[x]}}{b}$$

$$\frac{e^{-\frac{a}{b}}\left(2\,a\,e^{a/b}\,x+2\,b\,e^{a/b}\,x\,\text{Log}[x]-2\,a\,\sqrt{\pi}\,\sqrt{-\frac{a+b\,\text{Log}[x]}{b}}-b\,\sqrt{\pi}\,\sqrt{-\frac{a+b\,\text{Log}[x]}{b}}+(2\,a+b)\,\sqrt{\pi}\,\text{Erf}\left[\sqrt{-\frac{a+b\,\text{Log}[x]}{b}}\right]\sqrt{-\frac{a+b\,\text{Log}[x]}{b}}\right)}{2\,b\,\sqrt{a+b\,\text{Log}[x]}}$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{A+B\,\text{Log}[x]}{\sqrt{a+b\,\text{Log}[x]}},\ x,\ 4,\ 0\right\}$$

$$\frac{(2\,A\,b-(2\,a+b)\,B)\,e^{-\frac{a}{b}}\,\sqrt{\pi}\,\text{Erfi}\left[\frac{\sqrt{a+b\,\text{Log}[x]}}{\sqrt{b}}\right]}{2\,b^{3/2}}+\frac{B\,x\,\sqrt{a+b\,\text{Log}[x]}}{b}$$

$$\frac{1}{2\,b\,\sqrt{a+b\,\text{Log}[x]}}$$

$$e^{-\frac{a}{b}}\left(2\,a\,B\,e^{a/b}\,x+2\,b\,B\,e^{a/b}\,x\,\text{Log}[x]+2\,A\,b\,\sqrt{\pi}\,\sqrt{-\frac{a+b\,\text{Log}[x]}{b}}-2\,a\,B\,\sqrt{\pi}\,\sqrt{-\frac{a+b\,\text{Log}[x]}{b}}-b\,B\,\sqrt{\pi}\,\sqrt{-\frac{a+b\,\text{Log}[x]}{b}}+\right.$$

$$\left.(-2\,A\,b+(2\,a+b)\,B)\,\sqrt{\pi}\,\text{Erf}\left[\sqrt{-\frac{a+b\,\text{Log}[x]}{b}}\right]\sqrt{-\frac{a+b\,\text{Log}[x]}{b}}\right)$$

Valid but unnecessarily complicated antiderivative:

$$\{\text{Cos}[x]\,\text{Log}[\text{Cos}[x]],\ x,\ 4,\ 0\}$$

$$\text{ArcTanh}[\text{Sin}[x]]-\text{Sin}[x]+\text{Log}[\text{Cos}[x]]\,\text{Sin}[x]$$

$$-\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]+(-1+\text{Log}[\text{Cos}[x]])\,\text{Sin}[x]$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{1}{a\,x+b\,x\,\text{Log}[c\,x^n]^4},\ x,\ 5,\ 0\right\}$$

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

$$\frac{1}{4\,\sqrt{2}\,a^{3/4}\,b^{1/4}\,n}\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,b^{1/4}\,\text{Log}[c\,x^n]}{a^{1/4}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,b^{1/4}\,\text{Log}[c\,x^n]}{a^{1/4}}\right]-\right.$$

$$\left.\text{Log}\left[\sqrt{a}-\sqrt{2}\,a^{1/4}\,b^{1/4}\,\text{Log}[c\,x^n]+\sqrt{b}\,\text{Log}[c\,x^n]^2\right]+\text{Log}\left[\sqrt{a}+\sqrt{2}\,a^{1/4}\,b^{1/4}\,\text{Log}[c\,x^n]+\sqrt{b}\,\text{Log}[c\,x^n]^2\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{1}{a\,x+\frac{b\,x}{\text{Log}[c\,x^n]^4}},\ x,\ 7,\ 0\right\}$$

$$-\frac{(-b)^{1/4}\,\text{ArcTan}\left[\frac{a^{1/4}\,\text{Log}[c\,x^n]}{(-b)^{1/4}}\right]}{2\,a^{5/4}\,n}-\frac{(-b)^{1/4}\,\text{ArcTanh}\left[\frac{a^{1/4}\,\text{Log}[c\,x^n]}{(-b)^{1/4}}\right]}{2\,a^{5/4}\,n}+\frac{\text{Log}[c\,x^n]}{a\,n}$$

$$\frac{1}{8 a^{5/4} n}\left(2\sqrt{2}\, b^{1/4}\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\, a^{1/4}\,\mathrm{Log}[c\,x^n]}{b^{1/4}}\right]-2\sqrt{2}\, b^{1/4}\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\, a^{1/4}\,\mathrm{Log}[c\,x^n]}{b^{1/4}}\right]+8\,a^{1/4}\,\mathrm{Log}[c\,x^n]+\sqrt{2}\, b^{1/4}\,\mathrm{Log}\left[\sqrt{b}-\sqrt{2}\, a^{1/4}\, b^{1/4}\,\mathrm{Log}[c\,x^n]+\sqrt{a}\,\mathrm{Log}[c\,x^n]^2\right]-\sqrt{2}\, b^{1/4}\,\mathrm{Log}\left[\sqrt{b}+\sqrt{2}\, a^{1/4}\, b^{1/4}\,\mathrm{Log}[c\,x^n]+\sqrt{a}\,\mathrm{Log}[c\,x^n]^2\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{(1+\mathrm{Log}[x])^5}{x},\ x,\ 2,\ 0\right\}$$

$$\frac{1}{6}\,(1+\mathrm{Log}[x])^6$$

$$\frac{1}{6}\,\mathrm{Log}[x]\,\left(6+15\,\mathrm{Log}[x]+20\,\mathrm{Log}[x]^2+15\,\mathrm{Log}[x]^3+6\,\mathrm{Log}[x]^4+\mathrm{Log}[x]^5\right)$$

Unable to integrate:

$$\left\{\frac{\mathrm{Log}\left[1+\sqrt{x}-x\right]}{x},\ x,\ 10,\ 0\right\}$$

$$-2\,\mathrm{Log}\left[-\frac{1}{4}\left(1+\sqrt{5}\right)\left(1-\sqrt{5}-2\sqrt{x}\right)\right]\mathrm{Log}\left[\sqrt{x}\right]-2\,\mathrm{Log}\left[-\frac{1}{4}\left(1-\sqrt{5}\right)\left(1+\sqrt{5}-2\sqrt{x}\right)\right]\mathrm{Log}\left[\sqrt{x}\right]+2\,\mathrm{Log}\left[1+\sqrt{x}-x\right]\mathrm{Log}\left[\sqrt{x}\right]-2\,\mathrm{PolyLog}\left[2,\ -\frac{1}{2}\left(1-\sqrt{5}\right)\sqrt{x}\right]-2\,\mathrm{PolyLog}\left[2,\ -\frac{1}{2}\left(1+\sqrt{5}\right)\sqrt{x}\right]$$

$$\int\frac{\mathrm{Log}\left[1+\sqrt{x}-x\right]}{x}\,dx$$