Rubi 4.16.0 Trig Integration Test Results

Test results for the 538 problems in "4.1.0 (a sin)^m (b trg)^n.m"

Test results for the 72 problems in "4.1.1.1 (a+b sin)^n.m"

Test results for the 653 problems in "4.1.1.2 (g cos)^p (a+b sin)^m.m"

Problem 648: Result valid but suboptimal antiderivative.

$$\int (e\,\text{Cos}[c+d\,x])^{-3-m}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 311 leaves, ? steps):

$$\frac{(e\,\text{Cos}[c+d\,x])^{-m}\,\text{Sec}[c+d\,x]^4\,(-1+\text{Sin}[c+d\,x])\,(1+\text{Sin}[c+d\,x])\,(a+b\,\text{Sin}[c+d\,x])^{1+m}}{(a-b)\,d\,e^3\,(2+m)}+\frac{1}{(a-b)^2\,d\,e^3\,m\,(2+m)}$$
$$(-2\,b+a\,(2+m))\,(e\,\text{Cos}[c+d\,x])^{-m}\,\text{Sec}[c+d\,x]^4\,(-1+\text{Sin}[c+d\,x])\,(1+\text{Sin}[c+d\,x])^2\,(a+b\,\text{Sin}[c+d\,x])^{1+m}-$$
$$\frac{1}{(a-b)^3\,d\,e^3\,m\,(1+m)}\left(-b^2+a^2\,(1+m)\right)\,(e\,\text{Cos}[c+d\,x])^{-m}\,\text{Hypergeometric2F1}\left[\frac{m}{2},\,1+m,\,2+m,\,-\frac{2\,(a+b\,\text{Sin}[c+d\,x])}{(a-b)\,(-1+\text{Sin}[c+d\,x])}\right]$$
$$\text{Sec}[c+d\,x]^4\,(1+\text{Sin}[c+d\,x])^3\,\left(\frac{(a+b)\,(1+\text{Sin}[c+d\,x])}{(a-b)\,(-1+\text{Sin}[c+d\,x])}\right)^{\frac{1}{2}(-2+m)}\,(a+b\,\text{Sin}[c+d\,x])^{1+m}$$

Result (type 5, 420 leaves, 5 steps):

$$-\frac{(e\,\mathrm{Cos}[c+d\,x])^{-2-m}\,(a+b\,\mathrm{Sin}[c+d\,x])^{1+m}}{(a-b)\,d\,e\,(2+m)}-$$

$$\left(b\,(e\,\mathrm{Cos}[c+d\,x])^{-2-m}\,\mathrm{Hypergeometric2F1}\left[1+m,\frac{2+m}{2},2+m,\frac{2\,(a+b\,\mathrm{Sin}[c+d\,x])}{(a+b)\,(1+\mathrm{Sin}[c+d\,x])}\right]\,(1-\mathrm{Sin}[c+d\,x])\,\left(-\frac{(a-b)\,(1-\mathrm{Sin}[c+d\,x])}{(a+b)\,(1+\mathrm{Sin}[c+d\,x])}\right)^{m/2}\right.$$

$$\left.(a+b\,\mathrm{Sin}[c+d\,x])^{1+m}\right)\Big/\left(\left(a^2-b^2\right)\,d\,e\,(1+m)\,(2+m)\right)+\frac{a\,(e\,\mathrm{Cos}[c+d\,x])^{-2-m}\,(1+\mathrm{Sin}[c+d\,x])\,(a+b\,\mathrm{Sin}[c+d\,x])^{1+m}}{\left(a^2-b^2\right)\,d\,e\,(2+m)}+$$

$$\left(2^{-m/2}\,a\,(a+b+a\,m)\,(e\,\mathrm{Cos}[c+d\,x])^{-2-m}\,\mathrm{Hypergeometric2F1}\left[-\frac{m}{2},\frac{2+m}{2},\frac{2-m}{2},\frac{(a-b)\,(1-\mathrm{Sin}[c+d\,x])}{2\,(a+b\,\mathrm{Sin}[c+d\,x])}\right]\right.$$

$$\left.(1-\mathrm{Sin}[c+d\,x])\,\left(\frac{(a+b)\,(1+\mathrm{Sin}[c+d\,x])}{a+b\,\mathrm{Sin}[c+d\,x]}\right)^{\frac{2+m}{2}}\,(a+b\,\mathrm{Sin}[c+d\,x])^{1+m}\right)\Big/\left((a-b)\,(a+b)^2\,d\,e\,m\,(2+m)\right)$$

Test results for the 208 problems in "4.1.1.3 (g tan)^p (a+b sin)^m.m"

Test results for the 837 problems in "4.1.2.1 (a+b sin)^m (c+d sin)^n.m"

Test results for the 1563 problems in "4.1.2.2 (g cos)^p (a+b sin)^m (c+d sin)^n.m"

Problem 1480: Unable to integrate problem.

$$\int\frac{\mathrm{Sec}[e+f\,x]^4\,(a+b\,\mathrm{Sin}[e+f\,x])^{5/2}}{\sqrt{d\,\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 366 leaves, ? steps):

$$\frac{5\,a\,\mathrm{Sec}[e+f\,x]\,\left(b+a\,\mathrm{Sin}[e+f\,x]\right)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{6\,f\,\sqrt{d\,\mathrm{Sin}[e+f\,x]}}+\frac{\mathrm{Sec}[e+f\,x]^3\,\sqrt{d\,\mathrm{Sin}[e+f\,x]}\,\left(a+b\,\mathrm{Sin}[e+f\,x]\right)^{5/2}}{3\,d\,f}-\frac{1}{6\,\sqrt{d}\,f}$$

$$5\,a\,(a+b)^{3/2}\,\sqrt{-\frac{a\,(-1+\mathrm{Csc}[e+f\,x])}{a+b}}\,\sqrt{\frac{a\,(1+\mathrm{Csc}[e+f\,x])}{a-b}}\,\mathrm{EllipticF}\Big[\mathrm{ArcSin}\Big[\frac{\sqrt{d}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{d\,\mathrm{Sin}[e+f\,x]}}\Big],-\frac{a+b}{a-b}\Big]\,\mathrm{Tan}[e+f\,x]-$$

$$\left(5\,a\,b\,(a+b)\,\sqrt{-\frac{a\,(-1+\mathrm{Csc}[e+f\,x])}{a+b}}\,\sqrt{\frac{b+a\,\mathrm{Csc}[e+f\,x]}{-a+b}}\,\mathrm{EllipticE}\Big[\mathrm{ArcSin}\Big[\sqrt{-\frac{b+a\,\mathrm{Csc}[e+f\,x]}{a-b}}\Big],\frac{-a+b}{a+b}\Big]\,(1+\mathrm{Sin}[e+f\,x])\,\mathrm{Tan}[e+f\,x]\right)\Big/$$

$$\left(6\,f\,\sqrt{\frac{a\,(1+\mathrm{Csc}[e+f\,x])}{a-b}}\,\sqrt{d\,\mathrm{Sin}[e+f\,x]}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\right)$$

Result (type 8, 87 leaves, 1 step):

$$\frac{\mathrm{Sec}[e+f\,x]^3\,\sqrt{d\,\mathrm{Sin}[e+f\,x]}\,\left(a+b\,\mathrm{Sin}[e+f\,x]\right)^{5/2}}{3\,d\,f}+\frac{5}{6}\,a\,\mathrm{Unintegrable}\Big[\frac{\mathrm{Sec}[e+f\,x]^2\,\left(a+b\,\mathrm{Sin}[e+f\,x]\right)^{3/2}}{\sqrt{d\,\mathrm{Sin}[e+f\,x]}},x\Big]$$

Problem 1515: Unable to integrate problem.

$$\int\frac{\mathrm{Sec}[e+f\,x]^6\,\left(a+b\,\mathrm{Sin}[e+f\,x]\right)^{9/2}}{\sqrt{d\,\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 502 leaves, ? steps):

$$-\frac{3\,a\,b\,\left(-2\,a^2+b^2\right)\,\mathrm{Cos}[e+f\,x]\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{5\,f\,\sqrt{d\,\mathrm{Sin}[e+f\,x]}}+$$

$$\frac{\mathrm{Sec}[e+f\,x]^5\,\sqrt{d\,\mathrm{Sin}[e+f\,x]}\,\left(a+b\,\mathrm{Sin}[e+f\,x]\right)^{9/2}}{5\,d\,f}-\frac{1}{20\,d\,f}3\,a\,\mathrm{Sec}[e+f\,x]^3\,\sqrt{d\,\mathrm{Sin}[e+f\,x]}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}$$

$$\left(-a\,\left(7\,a^2+b^2\right)+2\,b\,\left(-7\,a^2+b^2\right)\,\mathrm{Sin}[e+f\,x]+5\,a\,\left(a^2-b^2\right)\,\mathrm{Sin}[e+f\,x]^2+\left(8\,a^2\,b-4\,b^3\right)\,\mathrm{Sin}[e+f\,x]^3\right)-\frac{1}{20\,\sqrt{d}\,f}3\,a\,\left(a+b\right)^{3/2}\,\left(5\,a^2+3\,a\,b-4\,b^2\right)$$

$$\sqrt{-\frac{a\,\left(-1+\mathrm{Csc}[e+f\,x]\right)}{a+b}}\,\sqrt{\frac{a\,\left(1+\mathrm{Csc}[e+f\,x]\right)}{a-b}}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{d}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{d\,\mathrm{Sin}[e+f\,x]}}\right],-\frac{a+b}{a-b}\right]\,\mathrm{Tan}[e+f\,x]-$$

$$\frac{1}{5\,d\,f\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}3\,b\,\left(2\,a^4-3\,a^2\,b^2+b^4\right)\,\sqrt{-\frac{a\,\left(-1+\mathrm{Csc}[e+f\,x]\right)}{a+b}}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\sqrt{-\frac{b+a\,\mathrm{Csc}[e+f\,x]}{a-b}}\right],1-\frac{2\,a}{a+b}\right]$$

$$\sqrt{d\,\mathrm{Sin}[e+f\,x]}\,\sqrt{-\frac{a\,\mathrm{Csc}[e+f\,x]^2\,\left(1+\mathrm{Sin}[e+f\,x]\right)\,\left(a+b\,\mathrm{Sin}[e+f\,x]\right)}{\left(a-b\right)^2}}\,\mathrm{Tan}[e+f\,x]$$

Result (type 8, 87 leaves, 1 step):

$$\frac{\mathrm{Sec}[e+f\,x]^5\,\sqrt{d\,\mathrm{Sin}[e+f\,x]}\,\left(a+b\,\mathrm{Sin}[e+f\,x]\right)^{9/2}}{5\,d\,f}+\frac{9}{10}\,a\,\mathrm{Unintegrable}\left[\frac{\mathrm{Sec}[e+f\,x]^4\,\left(a+b\,\mathrm{Sin}[e+f\,x]\right)^{7/2}}{\sqrt{d\,\mathrm{Sin}[e+f\,x]}},x\right]$$

Test results for the 51 problems in "4.1.2.3 (g sin)^p (a+b sin)^m (c+d sin)^n.m"

Test results for the 358 problems in "4.1.3.1 (a+b sin)^m (c+d sin)^n (A+B sin).m"

Test results for the 19 problems in "4.1.4.1 (a+b sin)^m (A+B sin+C sin^2).m"

Test results for the 34 problems in "4.1.4.2 (a+b sin)^m (c+d sin)^n (A+B sin+C sin^2).m"

Test results for the 594 problems in "4.1.7 (d trig)^m (a+b (c sin)^n)^p.m"

Problem 593: Unable to integrate problem.

$$\int\sqrt{a+\left(c\,\mathrm{Cos}[e+f\,x]+b\,\mathrm{Sin}[e+f\,x]\right)^2}\,dx$$

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

$$\frac{\text{EllipticE}\left[e+f x+\text{ArcTan}[b,c],-\frac{b^2+c^2}{a}\right]\sqrt{a+\left(c\,\text{Cos}[e+f x]+b\,\text{Sin}[e+f x]\right)^2}}{f\sqrt{1+\frac{\left(c\,\text{Cos}[e+f x]+b\,\text{Sin}[e+f x]\right)^2}{a}}}$$

Result (type 8, 115 leaves, 3 steps):

$$\frac{1}{2}\,\mathrm{i}\,\text{CannotIntegrate}\left[\frac{\text{Sec}[e+f x]^2\sqrt{a+\text{Cos}[e+f x]^2\left(c+b\,\text{Tan}[e+f x]\right)^2}}{\mathrm{i}-\text{Tan}[e+f x]},x\right]+$$
$$\frac{1}{2}\,\mathrm{i}\,\text{CannotIntegrate}\left[\frac{\text{Sec}[e+f x]^2\sqrt{a+\text{Cos}[e+f x]^2\left(c+b\,\text{Tan}[e+f x]\right)^2}}{\mathrm{i}+\text{Tan}[e+f x]},x\right]$$

Problem 594: Unable to integrate problem.

$$\int\frac{1}{\sqrt{a+\left(c\,\text{Cos}[e+f x]+b\,\text{Sin}[e+f x]\right)^2}}\,dx$$

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

$$\frac{\text{EllipticF}\left[e+f x+\text{ArcTan}[b,c],-\frac{b^2+c^2}{a}\right]\sqrt{1+\frac{\left(c\,\text{Cos}[e+f x]+b\,\text{Sin}[e+f x]\right)^2}{a}}}{f\sqrt{a+\left(c\,\text{Cos}[e+f x]+b\,\text{Sin}[e+f x]\right)^2}}$$

Result (type 8, 115 leaves, 3 steps):

$$\frac{1}{2}\,\mathrm{i}\,\text{CannotIntegrate}\left[\frac{\text{Sec}[e+f x]^2}{\left(\mathrm{i}-\text{Tan}[e+f x]\right)\sqrt{a+\text{Cos}[e+f x]^2\left(c+b\,\text{Tan}[e+f x]\right)^2}},x\right]+$$
$$\frac{1}{2}\,\mathrm{i}\,\text{CannotIntegrate}\left[\frac{\text{Sec}[e+f x]^2}{\left(\mathrm{i}+\text{Tan}[e+f x]\right)\sqrt{a+\text{Cos}[e+f x]^2\left(c+b\,\text{Tan}[e+f x]\right)^2}},x\right]$$

Test results for the 9 problems in "4.1.8 (a+b sin)^m (c+d trig)^n.m"

Test results for the 19 problems in "4.1.9 trig^m (a+b sin^n+c sin^(2 n))^p.m"

Test results for the 348 problems in "4.1.10 (c+d x)^m (a+b sin)^n.m"

Test results for the 113 problems in "4.1.11 (e x)^m (a+b x^n)^p sin.m"

Test results for the 357 problems in "4.1.12 (e x)^m (a+b sin(c+d x^n))^p.m"

Test results for the 36 problems in "4.1.13 (d+e x)^m sin(a+b x+c x^2)^n.m"

Test results for the 294 problems in "4.2.0 (a cos)^m (b trg)^n.m"

Test results for the 62 problems in "4.2.1.1 (a+b cos)^n.m"

Test results for the 88 problems in "4.2.1.2 (g sin)^p (a+b cos)^m.m"

Test results for the 22 problems in "4.2.1.3 (g tan)^p (a+b cos)^m.m"

Test results for the 932 problems in "4.2.2.1 (a+b cos)^m (c+d cos)^n.m"

Test results for the 4 problems in "4.2.2.2 (g sin)^p (a+b cos)^m (c+d cos)^n.m"

Test results for the 1 problems in "4.2.2.3 (g cos)^p (a+b cos)^m (c+d cos)^n.m"

Test results for the 644 problems in "4.2.3.1 (a+b cos)^m (c+d cos)^n (A+B cos).m"

Test results for the 393 problems in "4.2.4.1 (a+b cos)^m (A+B cos+C cos^2).m"

Test results for the 1541 problems in "4.2.4.2 (a+b cos)^m (c+d cos)^n (A+B cos+C cos^2).m"

Test results for the 98 problems in "4.2.7 (d trig)^m (a+b (c cos)^n)^p.m"

Test results for the 21 problems in "4.2.8 (a+b cos)^m (c+d trig)^n.m"

Test results for the 20 problems in "4.2.9 trig^m (a+b cos^n+c cos^(2 n))^p.m"

Test results for the 189 problems in "4.2.10 (c+d x)^m (a+b cos)^n.m"

Test results for the 99 problems in "4.2.12 (e x)^m (a+b cos(c+d x^n))^p.m"

Test results for the 34 problems in "4.2.13 (d+e x)^m cos(a+b x+c x^2)^n.m"

Test results for the 387 problems in "4.3.0 (a trg)^m (b tan)^n.m"

Test results for the 700 problems in "4.3.1.2 (d sec)^m (a+b tan)^n.m"

Test results for the 91 problems in "4.3.1.3 (d sin)^m (a+b tan)^n.m"

Test results for the 1328 problems in "4.3.2.1 (a+b tan)^m (c+d tan)^n.m"

Test results for the 855 problems in "4.3.3.1 (a+b tan)^m (c+d tan)^n (A+B tan).m"

Test results for the 171 problems in "4.3.4.2 (a+b tan)^m (c+d tan)^n (A+B tan+C tan^2).m"

Test results for the 499 problems in "4.3.7 (d trig)^m (a+b (c tan)^n)^p.m"

Test results for the 51 problems in "4.3.9 trig^m (a+b tan^n+c tan^(2 n))^p.m"

Test results for the 63 problems in "4.3.10 (c+d x)^m (a+b tan)^n.m"

Problem 17: Unable to integrate problem.

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

Optimal (type 3, 17 leaves, ? steps):

$$\frac{x\sqrt{\text{Tan}\left[a+b\,x^2\right]}}{b}$$

Result (type 8, 55 leaves, 1 step) :

$$\text{Unintegrable}\left[\frac{x^2}{\sqrt{\text{Tan}\left[a+b\,x^2\right]}},x\right]+\frac{\text{Unintegrable}\left[\sqrt{\text{Tan}\left[a+b\,x^2\right]},x\right]}{b}+\text{Unintegrable}\left[x^2\,\text{Tan}\left[a+b\,x^2\right]^{3/2},x\right]$$

Test results for the 66 problems in "4.3.11 (e x)^m (a+b tan(c+d x^n))^p.m"

Test results for the 52 problems in "4.4.0 (a trg)^m (b cot)^n.m"

Test results for the 23 problems in "4.4.1.2 (d csc)^m (a+b cot)^n.m"

Test results for the 19 problems in "4.4.1.3 (d cos)^m (a+b cot)^n.m"

Test results for the 106 problems in "4.4.2.1 (a+b cot)^m (c+d cot)^n.m"

Test results for the 64 problems in "4.4.7 (d trig)^m (a+b (c cot)^n)^p.m"

Test results for the 32 problems in "4.4.9 trig^m (a+b cot^n+c cot^(2 n))^p.m"

Test results for the 61 problems in "4.4.10 (c+d x)^m (a+b cot)^n.m"

Test results for the 299 problems in "4.5.0 (a sec)^m (b trg)^n.m"

Test results for the 879 problems in "4.5.1.2 (d sec)^n (a+b sec)^m.m"

Problem 286: Result unnecessarily involves higher level functions.

$$\int \text{Sec}[c+d\,x]^{5/3}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{2/3}\,dx$$

Optimal (type 5, 327 leaves, ? steps):

$$-\frac{3\,a\,\text{Sec}[c+d\,x]^{5/3}\,\text{Sin}[c+d\,x]}{2\,d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{1/3}}+\frac{9\,\text{Sec}[c+d\,x]^{2/3}\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{2/3}\,\text{Sin}[c+d\,x]}{4\,d}-\frac{9\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{2/3}\,\text{Tan}[c+d\,x]}{4\,d\,\left(\frac{1}{1+\text{Cos}[c+d\,x]}\right)^{1/3}\,\left(1+\text{Sec}[c+d\,x]\right)^{7/3}}+$$

$$\left(\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{3},\frac{5}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4\right]\,\left(\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\right)^{1/3}\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{2/3}\,\text{Tan}[c+d\,x]\right)\Big/$$

$$\left(8\,d\,\left(\frac{1}{1+\text{Cos}[c+d\,x]}\right)^{1/3}\,\left(1+\text{Sec}[c+d\,x]\right)^{4/3}\right)-$$

$$\left(5\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{3}{4},\frac{7}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4\right]\,\left(\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\right)^{1/3}\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{2/3}\,\text{Tan}[c+d\,x]^3\right)\Big/$$

$$\left(8\,d\,\left(\frac{1}{1+\text{Cos}[c+d\,x]}\right)^{1/3}\,\left(1+\text{Sec}[c+d\,x]\right)^{10/3}\right)$$

Result (type 6, 79 leaves, 3 steps):

$$\frac{1}{d\,\left(1+\text{Sec}[c+d\,x]\right)^{7/6}}2\times 2^{1/6}\,\text{AppellF1}\left[\frac{1}{2},-\frac{2}{3},-\frac{1}{6},\frac{3}{2},1-\text{Sec}[c+d\,x],\frac{1}{2}\,\left(1-\text{Sec}[c+d\,x]\right)\right]\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{2/3}\,\text{Tan}[c+d\,x]$$

Test results for the 306 problems in "4.5.1.3 (d sin)^n (a+b sec)^m.m"

Problem 271: Result optimal but 2 more steps used.

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

Optimal (type 5, 115 leaves, 4 steps):

$$\frac{\text{Hypergeometric2F1}\left[1,1+n,2+n,\frac{a+b\,\text{Sec}[c+d\,x]}{a-b}\right]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{1+n}}{2\,(a-b)\,d\,(1+n)}-\frac{\text{Hypergeometric2F1}\left[1,1+n,2+n,\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{1+n}}{2\,(a+b)\,d\,(1+n)}$$

Result (type 5, 115 leaves, 6 steps):

$$\frac{\text{Hypergeometric2F1}\left[1,1+n,2+n,\frac{a+b\,\text{Sec}[c+d\,x]}{a-b}\right]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{1+n}}{2\,(a-b)\,d\,(1+n)}-\frac{\text{Hypergeometric2F1}\left[1,1+n,2+n,\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right]\,\left(a+b\,\text{Sec}[c+d\,x]\right)^{1+n}}{2\,(a+b)\,d\,(1+n)}$$

Test results for the 365 problems in "4.5.1.4 (d tan)^n (a+b sec)^m.m"

Problem 207: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^2}{(a+a\,\text{Sec}[e+f x])^{9/2}}\,dx$$

Optimal (type 3, 177 leaves, ? steps):

$$-\frac{2\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+a\,\text{Sec}[e+f x]}}\right]}{a^{9/2}\,f}+\frac{91\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[e+f x]}}\right]}{32\,\sqrt{2}\,a^{9/2}\,f}+\frac{\text{Tan}[e+f x]}{3\,a\,f\,(a+a\,\text{Sec}[e+f x])^{7/2}}+\frac{11\,\text{Tan}[e+f x]}{24\,a^2\,f\,(a+a\,\text{Sec}[e+f x])^{5/2}}+\frac{27\,\text{Tan}[e+f x]}{32\,a^3\,f\,(a+a\,\text{Sec}[e+f x])^{3/2}}$$

Result (type 3, 227 leaves, 7 steps):

$$-\frac{2\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+a\,\text{Sec}[e+f x]}}\right]}{a^{9/2}\,f}+\frac{91\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sec}[e+f x]}}\right]}{32\,\sqrt{2}\,a^{9/2}\,f}+\frac{27\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Sin}[e+f x]}{64\,a^4\,f\,\sqrt{a+a\,\text{Sec}[e+f x]}}+\frac{11\,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^4\text{Sin}[e+f x]}{96\,a^4\,f\,\sqrt{a+a\,\text{Sec}[e+f x]}}+\frac{\text{Cos}[e+f x]^2\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^6\text{Sin}[e+f x]}{24\,a^4\,f\,\sqrt{a+a\,\text{Sec}[e+f x]}}$$

Test results for the 241 problems in "4.5.2.1 (a+b sec)^m (c+d sec)^n.m"

Test results for the 286 problems in "4.5.2.3 (g sec)^p (a+b sec)^m (c+d sec)^n.m"

Test results for the 634 problems in "4.5.3.1 (a+b sec)^m (d sec)^n (A+B sec).m"

Test results for the 70 problems in "4.5.4.1 (a+b sec)^m (A+B sec+C sec^2).m"

Test results for the 1373 problems in "4.5.4.2 (a+b sec)^m (d sec)^n (A+B sec+C sec^2).m"

Test results for the 470 problems in "4.5.7 (d trig)^m (a+b (c sec)^n)^p.m"

Problem 228: Result valid but suboptimal antiderivative.

$$\int \text{Sec}[e+f x]^5 \sqrt{a+b\,\text{Sec}[e+f x]^2}\,dx$$

Optimal (type 4, 372 leaves, 11 steps):

$$-\frac{\left(2 a^2-3 a b-8 b^2\right) \text{Sin}[e+f x] \sqrt{\text{Sec}[e+f x]^2 \left(a+b-a\,\text{Sin}[e+f x]^2\right)}}{15 b^2 f}+\frac{1}{15 b^2 f \sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}$$

$$\left(2 a^2-3 a b-8 b^2\right) \sqrt{\text{Cos}[e+f x]^2}\ \text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right] \sqrt{\text{Sec}[e+f x]^2 \left(a+b-a\,\text{Sin}[e+f x]^2\right)}\ -$$

$$\left((a-8 b) (a+b) \sqrt{\text{Cos}[e+f x]^2}\ \text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right] \sqrt{\text{Sec}[e+f x]^2 \left(a+b-a\,\text{Sin}[e+f x]^2\right)} \sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}\right)\Big/$$

$$\left(15 b f \left(a+b-a\,\text{Sin}[e+f x]^2\right)\right)+\frac{(a+4 b) \text{Sec}[e+f x] \sqrt{\text{Sec}[e+f x]^2 \left(a+b-a\,\text{Sin}[e+f x]^2\right)}\ \text{Tan}[e+f x]}{15 b f}+$$

$$\frac{\text{Sec}[e+f x]^3 \sqrt{\text{Sec}[e+f x]^2 \left(a+b-a\,\text{Sin}[e+f x]^2\right)}\ \text{Tan}[e+f x]}{5 f}$$

Result (type 4, 471 leaves, 11 steps):

$$-\frac{\left(2 a^2-3 a b-8 b^2\right) \sqrt{a+b \operatorname{Sec}[e+f x]^2} \operatorname{Sin}[e+f x] \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}}{15 b^2 f \sqrt{b+a \operatorname{Cos}[e+f x]^2}}+$$

$$\left(\left(2 a^2-3 a b-8 b^2\right) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticE}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}\right) \Big/$$

$$\left(15 b^2 f \sqrt{b+a \operatorname{Cos}[e+f x]^2} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}\right)-$$

$$\left((a-8 b) (a+b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticF}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}\right) \Big/$$

$$\left(15 b f \sqrt{b+a \operatorname{Cos}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}\right)+\frac{(a+4 b) \operatorname{Sec}[e+f x] \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2} \operatorname{Tan}[e+f x]}{15 b f \sqrt{b+a \operatorname{Cos}[e+f x]^2}}+$$

$$\frac{\operatorname{Sec}[e+f x]^3 \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2} \operatorname{Tan}[e+f x]}{5 f \sqrt{b+a \operatorname{Cos}[e+f x]^2}}$$

Problem 229: Result valid but suboptimal antiderivative.

$$\int \operatorname{Sec}[e+f x]^3 \sqrt{a+b \operatorname{Sec}[e+f x]^2}\, dx$$

Optimal (type 4, 288 leaves, 10 steps):

$$\frac{(a+2 b) \operatorname{Sin}[e+f x] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}}{3 b f}-$$

$$\frac{(a+2 b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticE}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}}{3 b f \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}}+$$

$$\left(2 (a+b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticF}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}\right) \Big/$$

$$\left(3 f \left(a+b-a \operatorname{Sin}[e+f x]^2\right)\right)+\frac{\operatorname{Sec}[e+f x] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)} \operatorname{Tan}[e+f x]}{3 f}$$

Result (type 4, 364 leaves, 10 steps):

$$\frac{(a+2b)\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,\mathrm{Sin}[e+fx]\sqrt{a+b-a\,\mathrm{Sin}[e+fx]^2}}{3\,b\,f\sqrt{b+a\,\mathrm{Cos}[e+fx]^2}}-\left((a+2b)\sqrt{\mathrm{Cos}[e+fx]^2}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\sqrt{a+b-a\,\mathrm{Sin}[e+fx]^2}\right)\Big/\left(3\,b\,f\sqrt{b+a\,\mathrm{Cos}[e+fx]^2}\sqrt{1-\frac{a\,\mathrm{Sin}[e+fx]^2}{a+b}}\right)+\frac{2(a+b)\sqrt{\mathrm{Cos}[e+fx]^2}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\sqrt{1-\frac{a\,\mathrm{Sin}[e+fx]^2}{a+b}}}{3\,f\sqrt{b+a\,\mathrm{Cos}[e+fx]^2}\sqrt{a+b-a\,\mathrm{Sin}[e+fx]^2}}+\frac{\mathrm{Sec}[e+fx]\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\sqrt{a+b-a\,\mathrm{Sin}[e+fx]^2}\,\mathrm{Tan}[e+fx]}{3\,f\sqrt{b+a\,\mathrm{Cos}[e+fx]^2}}$$

Problem 230: Result valid but suboptimal antiderivative.

$$\int \mathrm{Sec}[e+fx]\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Optimal (type 4, 218 leaves, 10 steps):

$$\frac{\mathrm{Sin}[e+fx]\sqrt{\mathrm{Sec}[e+fx]^2\left(a+b-a\,\mathrm{Sin}[e+fx]^2\right)}}{f}-\frac{\sqrt{\mathrm{Cos}[e+fx]^2}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{\mathrm{Sec}[e+fx]^2\left(a+b-a\,\mathrm{Sin}[e+fx]^2\right)}}{f\sqrt{1-\frac{a\,\mathrm{Sin}[e+fx]^2}{a+b}}}+\frac{1}{f\left(a+b-a\,\mathrm{Sin}[e+fx]^2\right)}(a+b)\sqrt{\mathrm{Cos}[e+fx]^2}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{\mathrm{Sec}[e+fx]^2\left(a+b-a\,\mathrm{Sin}[e+fx]^2\right)}\sqrt{1-\frac{a\,\mathrm{Sin}[e+fx]^2}{a+b}}$$

Result (type 4, 271 leaves, 10 steps):

$$\frac{\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\;\mathrm{Sin}[e+f\,x]\;\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}}{f\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}}-$$

$$\frac{\sqrt{\mathrm{Cos}[e+f\,x]^2}\;\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\;\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}}{f\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\;\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}}+$$

$$\frac{(a+b)\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\;\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\;\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}}{f\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\;\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}}$$

Problem 231: Result valid but suboptimal antiderivative.

$$\int \mathrm{Cos}[e+f\,x]\;\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\;dx$$

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

$$\frac{\sqrt{\mathrm{Cos}[e+f\,x]^2}\;\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\sqrt{\mathrm{Sec}[e+f\,x]^2\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}}{f\,\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}}$$

Result (type 4, 103 leaves, 5 steps):

$$\frac{\sqrt{\mathrm{Cos}[e+f\,x]^2}\;\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\;\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}}{f\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\;\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}}$$

Problem 232: Result valid but suboptimal antiderivative.

$$\int \mathrm{Cos}[e+f\,x]^3\;\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\;dx$$

Optimal (type 4, 246 leaves, 9 steps):

$$\frac{\operatorname{Cos}[e+f x]^2 \operatorname{Sin}[e+f x] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}}{3 f}+$$

$$\frac{(2 a+b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticE}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}}{3 a f \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}}-$$

$$\left(b (a+b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticF}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}\right) \Big/ \left(3 a f \left(a+b-a \operatorname{Sin}[e+f x]^2\right)\right)$$

Result (type 4, 299 leaves, 9 steps):

$$\frac{\operatorname{Cos}[e+f x]^2 \sqrt{a+b \operatorname{Sec}[e+f x]^2} \operatorname{Sin}[e+f x] \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}}{3 f \sqrt{b+a \operatorname{Cos}[e+f x]^2}}+$$

$$\left((2 a+b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticE}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}\right) \Big/ \left(3 a f \sqrt{b+a \operatorname{Cos}[e+f x]^2} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}\right)-$$

$$\frac{b (a+b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticF}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}}{3 a f \sqrt{b+a \operatorname{Cos}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}}$$

Problem 233: Result valid but suboptimal antiderivative.

$$\int \operatorname{Cos}[e+f x]^5 \sqrt{a+b \operatorname{Sec}[e+f x]^2} \, dx$$

Optimal (type 4, 338 leaves, 10 steps):

$$\frac{2\,(2\,a-b)\,\text{Cos}[e+f\,x]^2\,\text{Sin}[e+f\,x]\,\sqrt{\text{Sec}[e+f\,x]^2\,(a+b-a\,\text{Sin}[e+f\,x]^2)}}{15\,a\,f}+$$

$$\frac{\text{Cos}[e+f\,x]^2\,\text{Sin}[e+f\,x]\,(a+b-a\,\text{Sin}[e+f\,x]^2)\,\sqrt{\text{Sec}[e+f\,x]^2\,(a+b-a\,\text{Sin}[e+f\,x]^2)}}{5\,a\,f}+\frac{1}{15\,a^2\,f\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}$$

$$(8\,a^2+3\,a\,b-2\,b^2)\,\sqrt{\text{Cos}[e+f\,x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{\text{Sec}[e+f\,x]^2\,(a+b-a\,\text{Sin}[e+f\,x]^2)}\,-$$

$$\left(2\,(2\,a-b)\,b\,(a+b)\,\sqrt{\text{Cos}[e+f\,x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{\text{Sec}[e+f\,x]^2\,(a+b-a\,\text{Sin}[e+f\,x]^2)}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}\right)\Big/$$

$$\left(15\,a^2\,f\,(a+b-a\,\text{Sin}[e+f\,x]^2)\right)$$

Result (type 4, 400 leaves, 10 steps):

$$\frac{2\,(2\,a-b)\,\text{Cos}[e+f\,x]^2\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\text{Sin}[e+f\,x]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{15\,a\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}}+$$

$$\frac{\text{Cos}[e+f\,x]^2\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\text{Sin}[e+f\,x]\,(a+b-a\,\text{Sin}[e+f\,x]^2)^{3/2}}{5\,a\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}}+$$

$$\left((8\,a^2+3\,a\,b-2\,b^2)\,\sqrt{\text{Cos}[e+f\,x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)\Big/$$

$$\left(15\,a^2\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}\right)-$$

$$\left(2\,(2\,a-b)\,b\,(a+b)\,\sqrt{\text{Cos}[e+f\,x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}\right)\Big/$$

$$\left(15\,a^2\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)$$

Problem 241: Result valid but suboptimal antiderivative.

$$\int \text{Sec}[e+f\,x]^5\,(a+b\,\text{Sec}[e+f\,x]^2)^{3/2}\,dx$$

Optimal (type 4, 450 leaves, 12 steps):

$$-\frac{2\,(a+2\,b)\,\left(a^2-4\,a\,b-4\,b^2\right)\,\mathrm{Sin}[e+f\,x]\,\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}}{35\,b^2\,f}+\frac{1}{35\,b^2\,f\,\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}}$$

$$2\,(a+2\,b)\,\left(a^2-4\,a\,b-4\,b^2\right)\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\;\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}\;-$$

$$\left((a+b)\,\left(a^2-16\,a\,b-16\,b^2\right)\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\;\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}\right.$$

$$\left.\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}\right)\Bigg/\left(35\,b\,f\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)\right)+\frac{\left(a^2+11\,a\,b+8\,b^2\right)\,\mathrm{Sec}[e+f\,x]\,\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}\;\mathrm{Tan}[e+f\,x]}{35\,b\,f}+$$

$$\frac{2\,(4\,a+3\,b)\,\mathrm{Sec}[e+f\,x]^3\,\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}\;\mathrm{Tan}[e+f\,x]}{35\,f}+\frac{b\,\mathrm{Sec}[e+f\,x]^5\,\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}\;\mathrm{Tan}[e+f\,x]}{7\,f}$$

Result (type 4, 572 leaves, 12 steps) :

$$-\frac{2\,(a+2\,b)\,\left(a^2-4\,a\,b-4\,b^2\right)\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\,\text{Sin}[e+f\,x]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{35\,b^2\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}}+$$

$$\left(2\,(a+2\,b)\,\left(a^2-4\,a\,b-4\,b^2\right)\,\sqrt{\text{Cos}[e+f\,x]^2}\,\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)\Big/$$

$$\left(35\,b^2\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}\right)-$$

$$\left((a+b)\,\left(a^2-16\,a\,b-16\,b^2\right)\,\sqrt{\text{Cos}[e+f\,x]^2}\,\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}\right)\Big/$$

$$\left(35\,b\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)+\frac{\left(a^2+11\,a\,b+8\,b^2\right)\,\text{Sec}[e+f\,x]\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\,\,\text{Tan}[e+f\,x]}{35\,b\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}}+$$

$$\frac{2\,(4\,a+3\,b)\,\text{Sec}[e+f\,x]^3\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\,\,\text{Tan}[e+f\,x]}{35\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}}+$$

$$\frac{b\,\text{Sec}[e+f\,x]^5\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\,\,\text{Tan}[e+f\,x]}{7\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}}$$

Problem 242: Result valid but suboptimal antiderivative.

$$\int \text{Sec}[e+f\,x]^3\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\,dx$$

Optimal (type 4, 371 leaves, 11 steps):

$$\frac{\left(3 a^2+13 a b+8 b^2\right) \operatorname{Sin}[e+f x] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}}{15 b f}-\frac{1}{15 b f \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}}$$

$$\left(3 a^2+13 a b+8 b^2\right) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticE}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}+$$

$$\left((a+b) (9 a+8 b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticF}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}\right) \Big/$$

$$\left(15 f \left(a+b-a \operatorname{Sin}[e+f x]^2\right)\right)+\frac{2 (3 a+2 b) \operatorname{Sec}[e+f x] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)} \operatorname{Tan}[e+f x]}{15 f}+$$

$$\frac{b \operatorname{Sec}[e+f x]^3 \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)} \operatorname{Tan}[e+f x]}{5 f}$$

Result (type 4, 470 leaves, 11 steps):

$$\frac{\left(3 a^2+13 a b+8 b^2\right) \sqrt{a+b \operatorname{Sec}[e+f x]^2} \operatorname{Sin}[e+f x] \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}}{15 b f \sqrt{b+a \operatorname{Cos}[e+f x]^2}}-$$

$$\left(\left(3 a^2+13 a b+8 b^2\right) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticE}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}\right) \Big/$$

$$\left(15 b f \sqrt{b+a \operatorname{Cos}[e+f x]^2} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}\right)+$$

$$\left((a+b) (9 a+8 b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticF}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}\right) \Big/$$

$$\left(15 f \sqrt{b+a \operatorname{Cos}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}\right)+\frac{2 (3 a+2 b) \operatorname{Sec}[e+f x] \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2} \operatorname{Tan}[e+f x]}{15 f \sqrt{b+a \operatorname{Cos}[e+f x]^2}}+$$

$$\frac{b \operatorname{Sec}[e+f x]^3 \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2} \operatorname{Tan}[e+f x]}{5 f \sqrt{b+a \operatorname{Cos}[e+f x]^2}}$$

Problem 243: Result valid but suboptimal antiderivative.

$$\int \operatorname{Sec}[e+f x]\left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2} dx$$

Optimal (type 4, 290 leaves, 10 steps):

$$\frac{2 (2 a+b) \operatorname{Sin}[e+f x] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}}{3 f}-\frac{1}{3 f \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}}$$
$$2 (2 a+b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticE}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}+$$
$$\left((a+b)(3 a+2 b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticF}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}\right) \Big/$$
$$\left(3 f \left(a+b-a \operatorname{Sin}[e+f x]^2\right)\right)+\frac{b \operatorname{Sec}[e+f x] \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)} \operatorname{Tan}[e+f x]}{3 f}$$

Result (type 4, 366 leaves, 10 steps):

$$\frac{2 (2 a+b) \sqrt{a+b \operatorname{Sec}[e+f x]^2} \operatorname{Sin}[e+f x] \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}}{3 f \sqrt{b+a \operatorname{Cos}[e+f x]^2}}-$$
$$\left(2 (2 a+b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticE}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}\right) \Big/$$
$$\left(3 f \sqrt{b+a \operatorname{Cos}[e+f x]^2} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}\right)+$$
$$\left((a+b)(3 a+2 b) \sqrt{\operatorname{Cos}[e+f x]^2} \operatorname{EllipticF}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}\right) \Big/$$
$$\left(3 f \sqrt{b+a \operatorname{Cos}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}\right)+\frac{b \operatorname{Sec}[e+f x] \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2} \operatorname{Tan}[e+f x]}{3 f \sqrt{b+a \operatorname{Cos}[e+f x]^2}}$$

Problem 244: Result valid but suboptimal antiderivative.

$$\int \text{Cos}[e+f x] \left(a+b \text{Sec}[e+f x]^2\right)^{3/2} \, dx$$

Optimal (type 4, 224 leaves, 9 steps):

$$\frac{b \,\text{Sin}[e+f x] \sqrt{\text{Sec}[e+f x]^2 \left(a+b-a \,\text{Sin}[e+f x]^2\right)}}{f}+\frac{(a-b) \sqrt{\text{Cos}[e+f x]^2}\, \text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{\text{Sec}[e+f x]^2 \left(a+b-a \,\text{Sin}[e+f x]^2\right)}}{f \sqrt{1-\frac{a \,\text{Sin}[e+f x]^2}{a+b}}}+\frac{1}{f \left(a+b-a \,\text{Sin}[e+f x]^2\right)}$$

$$b (a+b) \sqrt{\text{Cos}[e+f x]^2}\, \text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{\text{Sec}[e+f x]^2 \left(a+b-a \,\text{Sin}[e+f x]^2\right)} \sqrt{1-\frac{a \,\text{Sin}[e+f x]^2}{a+b}}$$

Result (type 4, 277 leaves, 9 steps):

$$\frac{b \sqrt{a+b \,\text{Sec}[e+f x]^2}\, \text{Sin}[e+f x] \sqrt{a+b-a \,\text{Sin}[e+f x]^2}}{f \sqrt{b+a \,\text{Cos}[e+f x]^2}}+\left((a-b) \sqrt{\text{Cos}[e+f x]^2}\, \text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \,\text{Sec}[e+f x]^2} \sqrt{a+b-a \,\text{Sin}[e+f x]^2}\right) \Bigg/$$

$$\left(f \sqrt{b+a \,\text{Cos}[e+f x]^2} \sqrt{1-\frac{a \,\text{Sin}[e+f x]^2}{a+b}}\right)+$$

$$\frac{b (a+b) \sqrt{\text{Cos}[e+f x]^2}\, \text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \,\text{Sec}[e+f x]^2} \sqrt{1-\frac{a \,\text{Sin}[e+f x]^2}{a+b}}}{f \sqrt{b+a \,\text{Cos}[e+f x]^2} \sqrt{a+b-a \,\text{Sin}[e+f x]^2}}$$

Problem 245: Result valid but suboptimal antiderivative.

$$\int \text{Cos}[e+f x]^3 \left(a+b \text{Sec}[e+f x]^2\right)^{3/2} \, dx$$

Optimal (type 4, 241 leaves, 9 steps):

$$\frac{a \text{Cos}[e+f x]^2 \text{Sin}[e+f x] \sqrt{\text{Sec}[e+f x]^2 \left(a+b-a \text{Sin}[e+f x]^2\right)}}{3 f}+\frac{1}{3 f \sqrt{1-\frac{a \text{Sin}[e+f x]^2}{a+b}}}$$

$$2 (a+2 b) \sqrt{\text{Cos}[e+f x]^2} \text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right] \sqrt{\text{Sec}[e+f x]^2 \left(a+b-a \text{Sin}[e+f x]^2\right)}-$$

$$\left(b (a+b) \sqrt{\text{Cos}[e+f x]^2} \text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right] \sqrt{\text{Sec}[e+f x]^2 \left(a+b-a \text{Sin}[e+f x]^2\right)} \sqrt{1-\frac{a \text{Sin}[e+f x]^2}{a+b}}\right)\Big/$$

$$\left(3 f \left(a+b-a \text{Sin}[e+f x]^2\right)\right)$$

Result (type 4, 294 leaves, 9 steps):

$$\frac{a \text{Cos}[e+f x]^2 \sqrt{a+b \text{Sec}[e+f x]^2} \text{Sin}[e+f x] \sqrt{a+b-a \text{Sin}[e+f x]^2}}{3 f \sqrt{b+a \text{Cos}[e+f x]^2}}+$$

$$\left(2 (a+2 b) \sqrt{\text{Cos}[e+f x]^2} \text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right] \sqrt{a+b \text{Sec}[e+f x]^2} \sqrt{a+b-a \text{Sin}[e+f x]^2}\right)\Big/$$

$$\left(3 f \sqrt{b+a \text{Cos}[e+f x]^2} \sqrt{1-\frac{a \text{Sin}[e+f x]^2}{a+b}}\right)-$$

$$\frac{b (a+b) \sqrt{\text{Cos}[e+f x]^2} \text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right] \sqrt{a+b \text{Sec}[e+f x]^2} \sqrt{1-\frac{a \text{Sin}[e+f x]^2}{a+b}}}{3 f \sqrt{b+a \text{Cos}[e+f x]^2} \sqrt{a+b-a \text{Sin}[e+f x]^2}}$$

Problem 246: Result valid but suboptimal antiderivative.

$$\int \text{Cos}[e+f x]^5 \left(a+b \text{Sec}[e+f x]^2\right)^{3/2} dx$$

Optimal (type 4, 319 leaves, 10 steps):

$$-\frac{2\,(a-3\,(a+b))\,\mathrm{Cos}[e+f\,x]^2\,\mathrm{Sin}[e+f\,x]\,\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}}{15\,f}+$$
$$\frac{a\,\mathrm{Cos}[e+f\,x]^4\,\mathrm{Sin}[e+f\,x]\,\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}}{5\,f}+\frac{1}{15\,a\,f\,\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}}$$
$$\left(8\,a^2+13\,a\,b+3\,b^2\right)\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}\,-$$
$$\left(b\,(a+b)\,(4\,a+3\,b)\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}\,\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}\right)\Big/$$
$$\left(15\,a\,f\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)\right)$$

Result (type 4, 395 leaves, 10 steps):

$$-\frac{2\,(a-3\,(a+b))\,\mathrm{Cos}[e+f\,x]^2\,\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\,\mathrm{Sin}[e+f\,x]\,\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}}{15\,f\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}}+$$
$$\frac{a\,\mathrm{Cos}[e+f\,x]^4\,\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\,\mathrm{Sin}[e+f\,x]\,\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}}{5\,f\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}}+$$
$$\left(\left(8\,a^2+13\,a\,b+3\,b^2\right)\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}\right)\Big/$$
$$\left(15\,a\,f\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}\right)-$$
$$\left(b\,(a+b)\,(4\,a+3\,b)\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}\right)\Big/$$
$$\left(15\,a\,f\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\,\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}\right)$$

Problem 257: Result valid but suboptimal antiderivative.

$$\int\frac{\mathrm{Sec}[e+f\,x]^5}{\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}}\,dx$$

Optimal (type 4, 330 leaves, 10 steps):

$$\frac{2\,(a-b)\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}{3\,b^2\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}-\frac{(a-2\,b)\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{3\,b\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}-$$

$$\frac{2\,(a-b)\,\text{Sec}[e+f\,x]\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)\,\text{Tan}[e+f\,x]}{3\,b^2\,f\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}+\frac{\text{Sec}[e+f\,x]^3\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)\,\text{Tan}[e+f\,x]}{3\,b\,f\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}$$

Result (type 4, 380 leaves, 10 steps):

$$\frac{2\,(a-b)\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{3\,b^2\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}-$$

$$\frac{(a-2\,b)\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{3\,b\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}-$$

$$\frac{2\,(a-b)\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{Sec}[e+f\,x]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\,\text{Tan}[e+f\,x]}{3\,b^2\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}+$$

$$\frac{\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{Sec}[e+f\,x]^3\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\,\text{Tan}[e+f\,x]}{3\,b\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}$$

Problem 258: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Sec}[e+f\,x]^3}{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}\,dx$$

Optimal (type 4, 170 leaves, 7 steps):

$$-\frac{\sqrt{a}\,\sqrt{a+b}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a}\,\text{Sin}[e+f\,x]}{\sqrt{a+b}}\right],\frac{a+b}{a}\right]\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{b\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}+\frac{\text{Sec}[e+f\,x]\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)\,\text{Tan}[e+f\,x]}{b\,f\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}$$

Result (type 4, 202 leaves, 7 steps):

$$-\frac{\sqrt{a}\,\sqrt{a+b}\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a}\,\text{Sin}[e+f\,x]}{\sqrt{a+b}}\right],\frac{a+b}{a}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{b\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}+$$
$$\frac{\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{Sec}[e+f\,x]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\,\text{Tan}[e+f\,x]}{b\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}$$

Problem 259: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Sec}[e+f\,x]}{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}\,dx$$

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

$$\frac{\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{\text{Sec}[e+f\,x]^2\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}$$

Result (type 4, 103 leaves, 5 steps):

$$\frac{\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}$$

Problem 260: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Cos}[e+f\,x]}{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}\,dx$$

Optimal (type 4, 105 leaves, 5 steps):

$$\frac{\sqrt{a+b}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a}\,\text{Sin}[e+f\,x]}{\sqrt{a+b}}\right],\frac{a+b}{a}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{\sqrt{a}\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{\text{Sec}[e+f\,x]^2\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}$$

Result (type 4, 128 leaves, 5 steps):

$$\frac{\sqrt{a+b}\ \sqrt{b+a\,\text{Cos}[e+f\,x]^2}\ \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a}\ \text{Sin}[e+f\,x]}{\sqrt{a+b}}\right],\ \frac{a+b}{a}\right]\ \sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{\sqrt{a}\ f\ \sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\ \sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}$$

Problem 261: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Cos}[e+f\,x]^3}{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}\,dx$$

Optimal (type 4, 255 leaves, 9 steps):

$$\frac{\text{Sin}[e+f\,x]\ \left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}{3\,a\,f\,\sqrt{\text{Sec}[e+f\,x]^2\ \left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}+\frac{2\ (a-b)\ \text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\ \frac{a}{a+b}\right]\ \left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}{3\,a^2\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{\text{Sec}[e+f\,x]^2\ \left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}\ \sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}-$$

$$\frac{(a-2\,b)\ b\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\ \frac{a}{a+b}\right]\ \sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{3\,a^2\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{\text{Sec}[e+f\,x]^2\ \left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}$$

Result (type 4, 296 leaves, 9 steps):

$$\frac{\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\ \text{Sin}[e+f\,x]\ \sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{3\,a\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}+$$

$$\frac{2\ (a-b)\ \sqrt{b+a\,\text{Cos}[e+f\,x]^2}\ \text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\ \frac{a}{a+b}\right]\ \sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{3\,a^2\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\ \sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}-$$

$$\frac{(a-2\,b)\ b\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\ \text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\ \frac{a}{a+b}\right]\ \sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{3\,a^2\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\ \sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}$$

Problem 262: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Cos}[e+f\,x]^5}{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}\,dx$$

Optimal (type 4, 345 leaves, 10 steps) :

$$\frac{4(a-b)\,\text{Sin}[e+f x]\left(a+b-a\,\text{Sin}[e+f x]^2\right)}{15 a^2 f \sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}+\frac{\text{Cos}[e+f x]^2\,\text{Sin}[e+f x]\left(a+b-a\,\text{Sin}[e+f x]^2\right)}{5 a f \sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}+\frac{\left(8 a^2-7 a b+8 b^2\right)\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\left(a+b-a\,\text{Sin}[e+f x]^2\right)}{15 a^3 f \sqrt{\text{Cos}[e+f x]^2}\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}-\frac{b\left(4 a^2-3 a b+8 b^2\right)\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}{15 a^3 f \sqrt{\text{Cos}[e+f x]^2}\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}$$

Result (type 4, 395 leaves, 10 steps) :

$$\frac{4(a-b)\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{Sin}[e+f x]\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}{15 a^2 f \sqrt{a+b\,\text{Sec}[e+f x]^2}}+\frac{\text{Cos}[e+f x]^2\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{Sin}[e+f x]\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}{5 a f \sqrt{a+b\,\text{Sec}[e+f x]^2}}+\frac{\left(8 a^2-7 a b+8 b^2\right)\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}{15 a^3 f \sqrt{\text{Cos}[e+f x]^2}\sqrt{a+b\,\text{Sec}[e+f x]^2}\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}-\frac{b\left(4 a^2-3 a b+8 b^2\right)\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}{15 a^3 f \sqrt{\text{Cos}[e+f x]^2}\sqrt{a+b\,\text{Sec}[e+f x]^2}\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}$$

Problem 270: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Sec}[e+f x]^5}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\,dx$$

Optimal (type 4, 289 leaves, 10 steps) :

$$\frac{a\,(2\,a+b)\,\text{Sin}[e+f\,x]}{b^2\,(a+b)\,f\,\sqrt{\text{Sec}[e+f\,x]^2\,(a+b-a\,\text{Sin}[e+f\,x]^2)}}-\frac{(2\,a+b)\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,(a+b-a\,\text{Sin}[e+f\,x]^2)}{b^2\,(a+b)\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{\text{Sec}[e+f\,x]^2\,(a+b-a\,\text{Sin}[e+f\,x]^2)}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}+$$

$$\frac{\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{b\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{\text{Sec}[e+f\,x]^2\,(a+b-a\,\text{Sin}[e+f\,x]^2)}}+\frac{\text{Sec}[e+f\,x]\,\text{Tan}[e+f\,x]}{b\,f\,\sqrt{\text{Sec}[e+f\,x]^2\,(a+b-a\,\text{Sin}[e+f\,x]^2)}}$$

Result (type 4, 367 leaves, 10 steps):

$$\frac{a\,(2\,a+b)\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{Sin}[e+f\,x]}{b^2\,(a+b)\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}-$$

$$\frac{(2\,a+b)\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{b^2\,(a+b)\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}+$$

$$\frac{\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{b\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}+\frac{\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{Sec}[e+f\,x]\,\text{Tan}[e+f\,x]}{b\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}$$

Problem 271: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Sec}[e+f\,x]^3}{(a+b\,\text{Sec}[e+f\,x]^2)^{3/2}}\,dx$$

Optimal (type 4, 150 leaves, 7 steps):

$$-\frac{a\,\text{Sin}[e+f\,x]}{b\,(a+b)\,f\,\sqrt{\text{Sec}[e+f\,x]^2\,(a+b-a\,\text{Sin}[e+f\,x]^2)}}+\frac{\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,(a+b-a\,\text{Sin}[e+f\,x]^2)}{b\,(a+b)\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{\text{Sec}[e+f\,x]^2\,(a+b-a\,\text{Sin}[e+f\,x]^2)}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}$$

Result (type 4, 182 leaves, 7 steps):

$$-\frac{a\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{Sin}[e+f\,x]}{b\,(a+b)\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}+\frac{\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{b\,(a+b)\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}$$

Problem 272: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Sec}[e+f x]}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\,dx$$

Optimal (type 4, 229 leaves, 9 steps):

$$\frac{\text{Sin}[e+f x]}{(a+b) f \sqrt{\text{Sec}[e+f x]^2}\left(a+b-a\,\text{Sin}[e+f x]^2\right)}-\frac{\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\left(a+b-a\,\text{Sin}[e+f x]^2\right)}{a\,(a+b) f \sqrt{\text{Cos}[e+f x]^2}\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}+\frac{\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}{a f \sqrt{\text{Cos}[e+f x]^2}\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}$$

Result (type 4, 284 leaves, 9 steps):

$$\frac{\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{Sin}[e+f x]}{(a+b) f \sqrt{a+b\,\text{Sec}[e+f x]^2}\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}-\frac{\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}{a\,(a+b) f \sqrt{\text{Cos}[e+f x]^2}\sqrt{a+b\,\text{Sec}[e+f x]^2}\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}+\frac{\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}{a f \sqrt{\text{Cos}[e+f x]^2}\sqrt{a+b\,\text{Sec}[e+f x]^2}\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}$$

Problem 273: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\,dx$$

Optimal (type 4, 240 leaves, 9 steps):

$$-\frac{b\,\text{Sin}[e+f x]}{a\,(a+b) f \sqrt{\text{Sec}[e+f x]^2}\left(a+b-a\,\text{Sin}[e+f x]^2\right)}+\frac{(a+2 b)\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\left(a+b-a\,\text{Sin}[e+f x]^2\right)}{a^2\,(a+b) f \sqrt{\text{Cos}[e+f x]^2}\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}-\frac{2 b\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}{a^2 f \sqrt{\text{Cos}[e+f x]^2}\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}$$

Result (type 4, 295 leaves, 9 steps):

$$-\frac{b\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\ \text{Sin}[e+f\,x]}{a\,(a+b)\,f\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\ \sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}+\frac{(a+2\,b)\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\ \text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{a^2\,(a+b)\,f\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\ \sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}-\frac{2\,b\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\ \text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{a^2\,f\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\ \sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}$$

Problem 274: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Cos}[e+f\,x]^3}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}\,dx$$

Optimal (type 4, 335 leaves, 10 steps):

$$-\frac{b\,\text{Cos}[e+f\,x]^2\,\text{Sin}[e+f\,x]}{a\,(a+b)\,f\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}+\frac{(a+4\,b)\,\text{Sin}[e+f\,x]\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}{3\,a^2\,(a+b)\,f\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}+\frac{\left(2\,a^2-3\,a\,b-8\,b^2\right)\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}{3\,a^3\,(a+b)\,f\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}\ \sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}-\frac{(a-8\,b)\,b\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{3\,a^3\,f\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}$$

Result (type 4, 399 leaves, 10 steps):

$$-\frac{b \operatorname{Cos}[e+f x]^2 \sqrt{b+a \operatorname{Cos}[e+f x]^2} \operatorname{Sin}[e+f x]}{a (a+b) f \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}}+\frac{(a+4 b) \sqrt{b+a \operatorname{Cos}[e+f x]^2} \operatorname{Sin}[e+f x] \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}}{3 a^2 (a+b) f \sqrt{a+b \operatorname{Sec}[e+f x]^2}}+$$

$$\frac{\left(2 a^2-3 a b-8 b^2\right) \sqrt{b+a \operatorname{Cos}[e+f x]^2} \operatorname{EllipticE}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}}{3 a^3 (a+b) f \sqrt{\operatorname{Cos}[e+f x]^2} \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}}-$$

$$\frac{(a-8 b) b \sqrt{b+a \operatorname{Cos}[e+f x]^2} \operatorname{EllipticF}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}}{3 a^3 f \sqrt{\operatorname{Cos}[e+f x]^2} \sqrt{a+b \operatorname{Sec}[e+f x]^2} \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}}$$

Problem 275: Result valid but suboptimal antiderivative.

$$\int \frac{\operatorname{Cos}[e+f x]^5}{\left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Optimal (type 4, 436 leaves, 11 steps):

$$-\frac{b \operatorname{Cos}[e+f x]^4 \operatorname{Sin}[e+f x]}{a (a+b) f \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}}+$$

$$\frac{\left(4 a^2-5 a b-24 b^2\right) \operatorname{Sin}[e+f x] \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}{15 a^3 (a+b) f \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}}+\frac{(a+6 b) \operatorname{Cos}[e+f x]^2 \operatorname{Sin}[e+f x] \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}{5 a^2 (a+b) f \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}}+$$

$$\frac{\left(8 a^3-9 a^2 b+16 a b^2+48 b^3\right) \operatorname{EllipticE}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}{15 a^4 (a+b) f \sqrt{\operatorname{Cos}[e+f x]^2} \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)} \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}}-$$

$$\frac{4 b \left(a^2-2 a b+12 b^2\right) \operatorname{EllipticF}\left[\operatorname{ArcSin}[\operatorname{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{1-\frac{a \operatorname{Sin}[e+f x]^2}{a+b}}}{15 a^4 f \sqrt{\operatorname{Cos}[e+f x]^2} \sqrt{\operatorname{Sec}[e+f x]^2 \left(a+b-a \operatorname{Sin}[e+f x]^2\right)}}$$

Result (type 4, 509 leaves, 11 steps):

$$-\frac{b\,\text{Cos}[e+f\,x]^4\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\,\text{Sin}[e+f\,x]}{a\,(a+b)\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}+\frac{\left(4\,a^2-5\,a\,b-24\,b^2\right)\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\,\text{Sin}[e+f\,x]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{15\,a^3\,(a+b)\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}+$$

$$\frac{(a+6\,b)\,\text{Cos}[e+f\,x]^2\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\,\text{Sin}[e+f\,x]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{5\,a^2\,(a+b)\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}+$$

$$\left(\left(8\,a^3-9\,a^2\,b+16\,a\,b^2+48\,b^3\right)\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)\Big/$$

$$\left(15\,a^4\,(a+b)\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}\right)-$$

$$\frac{4\,b\,\left(a^2-2\,a\,b+12\,b^2\right)\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{15\,a^4\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}$$

Problem 283: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Sec}[e+f\,x]^5}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Optimal (type 4, 321 leaves, 10 steps):

$$-\frac{2\,a\,(a+2\,b)\,\text{Sin}[e+f\,x]}{3\,b^2\,(a+b)^2\,f\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}-\frac{a\,\text{Sin}[e+f\,x]}{3\,b\,(a+b)\,f\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}+$$

$$\frac{2\,(a+2\,b)\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}{3\,b^2\,(a+b)^2\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}\,\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}-$$

$$\frac{\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{3\,b\,(a+b)\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}$$

Result (type 4, 383 leaves, 10 steps):

$$-\frac{a\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\,\mathrm{Sin}[e+f\,x]}{3\,b\,(a+b)\,f\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)^{3/2}}-\frac{2\,a\,(a+2\,b)\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\,\mathrm{Sin}[e+f\,x]}{3\,b^2\,(a+b)^2\,f\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}}+$$

$$\frac{2\,(a+2\,b)\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}}{3\,b^2\,(a+b)^2\,f\sqrt{\mathrm{Cos}[e+f\,x]^2}\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}}-$$

$$\frac{\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}}{3\,b\,(a+b)\,f\sqrt{\mathrm{Cos}[e+f\,x]^2}\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}}$$

Problem 284: Result valid but suboptimal antiderivative.

$$\int\frac{\mathrm{Sec}[e+f\,x]^3}{\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Optimal (type 4, 319 leaves, 10 steps):

$$-\frac{(a-b)\,\mathrm{Sin}[e+f\,x]}{3\,b\,(a+b)^2\,f\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}}+\frac{\mathrm{Sin}[e+f\,x]}{3\,(a+b)\,f\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}}+$$

$$\frac{(a-b)\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\frac{a}{a+b}\right]\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}{3\,a\,b\,(a+b)^2\,f\sqrt{\mathrm{Cos}[e+f\,x]^2}\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}}+$$

$$\frac{\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}}{3\,a\,(a+b)\,f\sqrt{\mathrm{Cos}[e+f\,x]^2}\sqrt{\mathrm{Sec}[e+f\,x]^2\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}}$$

Result (type 4, 381 leaves, 10 steps):

$$\frac{\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\ \text{Sin}[e+f\,x]}{3\,(a+b)\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\ \left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{3/2}}-\frac{(a-b)\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\ \text{Sin}[e+f\,x]}{3\,b\,(a+b)^2\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\ \sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}+$$

$$\frac{(a-b)\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\ \text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{3\,a\,b\,(a+b)^2\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\ \sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}+$$

$$\frac{\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\ \text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{3\,a\,(a+b)\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\ \sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}$$

Problem 285: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Sec}[e+f\,x]}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Optimal (type 4, 327 leaves, 10 steps):

$$\frac{2\,(2\,a+b)\,\text{Sin}[e+f\,x]}{3\,a\,(a+b)^2\,f\,\sqrt{\text{Sec}[e+f\,x]^2}\ \left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}-\frac{b\,\text{Sin}[e+f\,x]}{3\,a\,(a+b)\,f\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)\sqrt{\text{Sec}[e+f\,x]^2\ \left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}-$$

$$\frac{2\,(2\,a+b)\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}{3\,a^2\,(a+b)^2\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{\text{Sec}[e+f\,x]^2\ \left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}\ \sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}+$$

$$\frac{(3\,a+2\,b)\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{3\,a^2\,(a+b)\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\ \sqrt{\text{Sec}[e+f\,x]^2\ \left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}$$

Result (type 4, 389 leaves, 10 steps):

$$-\frac{b\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{Sin}[e+f\,x]}{3\,a\,(a+b)\,f\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{3/2}}+\frac{2\,(2\,a+b)\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{Sin}[e+f\,x]}{3\,a\,(a+b)^2\,f\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}-\frac{2\,(2\,a+b)\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{3\,a^2\,(a+b)^2\,f\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}+\frac{(3\,a+2\,b)\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{3\,a^2\,(a+b)\,f\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}$$

Problem 286: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Cos}[e+f\,x]}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Optimal (type 4, 349 leaves, 10 steps):

$$-\frac{2\,b\,(3\,a+2\,b)\,\text{Sin}[e+f\,x]}{3\,a^2\,(a+b)^2\,f\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}-\frac{b\,\text{Cos}[e+f\,x]^2\,\text{Sin}[e+f\,x]}{3\,a\,(a+b)\,f\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}+\frac{\left(3\,a^2+13\,a\,b+8\,b^2\right)\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}{3\,a^3\,(a+b)^2\,f\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}-\frac{b\,(9\,a+8\,b)\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}{3\,a^3\,(a+b)\,f\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{\text{Sec}[e+f\,x]^2\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}}$$

Result (type 4, 411 leaves, 10 steps):

$$-\frac{b\,\text{Cos}[e+f x]^2\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{Sin}[e+f x]}{3 a (a+b) f \sqrt{a+b\,\text{Sec}[e+f x]^2}\left(a+b-a\,\text{Sin}[e+f x]^2\right)^{3/2}}-\frac{2 b (3 a+2 b)\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{Sin}[e+f x]}{3 a^2 (a+b)^2 f \sqrt{a+b\,\text{Sec}[e+f x]^2}\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}+$$

$$\left(\left(3 a^2+13 a b+8 b^2\right)\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)\Big/$$

$$\left(3 a^3 (a+b)^2 f \sqrt{\text{Cos}[e+f x]^2}\sqrt{a+b\,\text{Sec}[e+f x]^2}\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}\right)-$$

$$\frac{b (9 a+8 b)\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}{3 a^3 (a+b) f \sqrt{\text{Cos}[e+f x]^2}\sqrt{a+b\,\text{Sec}[e+f x]^2}\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}$$

Problem 287: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^3}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}}\,dx$$

Optimal (type 4, 441 leaves, 11 steps):

$$-\frac{2 b (4 a+3 b)\,\text{Cos}[e+f x]^2\,\text{Sin}[e+f x]}{3 a^2 (a+b)^2 f \sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}-$$

$$\frac{b\,\text{Cos}[e+f x]^4\,\text{Sin}[e+f x]}{3 a (a+b) f \left(a+b-a\,\text{Sin}[e+f x]^2\right)\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}+\frac{\left(a^2+11 a b+8 b^2\right)\text{Sin}[e+f x]\left(a+b-a\,\text{Sin}[e+f x]^2\right)}{3 a^3 (a+b)^2 f \sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}+$$

$$\frac{2 (a+2 b)\left(a^2-4 a b-4 b^2\right)\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\left(a+b-a\,\text{Sin}[e+f x]^2\right)}{3 a^4 (a+b)^2 f \sqrt{\text{Cos}[e+f x]^2}\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}-$$

$$\frac{b\left(a^2-16 a b-16 b^2\right)\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}{3 a^4 (a+b) f \sqrt{\text{Cos}[e+f x]^2}\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}$$

Result (type 4, 512 leaves, 11 steps):

$$-\frac{b\,\text{Cos}[e+f x]^4\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{Sin}[e+f x]}{3 a (a+b) f\sqrt{a+b\,\text{Sec}[e+f x]^2}\,\left(a+b-a\,\text{Sin}[e+f x]^2\right)^{3/2}}-\frac{2 b (4 a+3 b)\,\text{Cos}[e+f x]^2\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{Sin}[e+f x]}{3 a^2 (a+b)^2 f\sqrt{a+b\,\text{Sec}[e+f x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}+$$

$$\frac{\left(a^2+11 a b+8 b^2\right)\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{Sin}[e+f x]\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}{3 a^3 (a+b)^2 f\sqrt{a+b\,\text{Sec}[e+f x]^2}}+$$

$$\left(2 (a+2 b)\left(a^2-4 a b-4 b^2\right)\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)\Big/$$

$$\left(3 a^4 (a+b)^2 f\sqrt{\text{Cos}[e+f x]^2}\,\sqrt{a+b\,\text{Sec}[e+f x]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}\right)-$$

$$\frac{b\left(a^2-16 a b-16 b^2\right)\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}{3 a^4 (a+b) f\sqrt{\text{Cos}[e+f x]^2}\,\sqrt{a+b\,\text{Sec}[e+f x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}$$

Problem 288: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Cos}[e+f x]^5}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}}\,dx$$

Optimal (type 4, 559 leaves, 12 steps):

$$-\frac{2 b (5 a+4 b)\,\text{Cos}[e+f x]^4\,\text{Sin}[e+f x]}{3 a^2 (a+b)^2 f\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}-\frac{b\,\text{Cos}[e+f x]^6\,\text{Sin}[e+f x]}{3 a (a+b) f\left(a+b-a\,\text{Sin}[e+f x]^2\right)\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}+$$

$$\frac{2\left(2 a^3-3 a^2 b-42 a b^2-32 b^3\right)\text{Sin}[e+f x]\left(a+b-a\,\text{Sin}[e+f x]^2\right)}{15 a^4 (a+b)^2 f\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}+\frac{\left(3 a^2+61 a b+48 b^2\right)\text{Cos}[e+f x]^2\,\text{Sin}[e+f x]\left(a+b-a\,\text{Sin}[e+f x]^2\right)}{15 a^3 (a+b)^2 f\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}+$$

$$\left(\left(8 a^4-11 a^3 b+27 a^2 b^2+184 a b^3+128 b^4\right)\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\left(a+b-a\,\text{Sin}[e+f x]^2\right)\right)\Big/$$

$$\left(15 a^5 (a+b)^2 f\sqrt{\text{Cos}[e+f x]^2}\,\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}\,\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}\right)-$$

$$\frac{b\left(4 a^3-9 a^2 b+120 a b^2+128 b^3\right)\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}{15 a^5 (a+b) f\sqrt{\text{Cos}[e+f x]^2}\,\sqrt{\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)}}$$

Result (type 4, 639 leaves, 12 steps):

$$-\frac{b\,\mathrm{Cos}[e+f x]^6\sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\,\mathrm{Sin}[e+f x]}{3\,a\,(a+b)\,f\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\,\left(a+b-a\,\mathrm{Sin}[e+f x]^2\right)^{3/2}}-\frac{2\,b\,(5\,a+4\,b)\,\mathrm{Cos}[e+f x]^4\sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\,\mathrm{Sin}[e+f x]}{3\,a^2\,(a+b)^2\,f\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\,\sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}}+$$
$$\frac{2\left(2\,a^3-3\,a^2\,b-42\,a\,b^2-32\,b^3\right)\sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\,\mathrm{Sin}[e+f x]\,\sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}}{15\,a^4\,(a+b)^2\,f\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}}+$$
$$\frac{\left(3\,a^2+61\,a\,b+48\,b^2\right)\mathrm{Cos}[e+f x]^2\sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\,\mathrm{Sin}[e+f x]\,\sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}}{15\,a^3\,(a+b)^2\,f\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}}+$$
$$\left(\left(8\,a^4-11\,a^3\,b+27\,a^2\,b^2+184\,a\,b^3+128\,b^4\right)\sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}\right)\Big/$$
$$\left(15\,a^5\,(a+b)^2\,f\sqrt{\mathrm{Cos}[e+f x]^2}\,\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\,\sqrt{1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}}\right)-$$
$$\left(b\left(4\,a^3-9\,a^2\,b+120\,a\,b^2+128\,b^3\right)\sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}}\right)\Big/$$
$$\left(15\,a^5\,(a+b)\,f\sqrt{\mathrm{Cos}[e+f x]^2}\,\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\,\sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}\right)$$

Problem 299: Result valid but suboptimal antiderivative.

$$\int \mathrm{Sec}[e+f x]^3\left(a+b\,\mathrm{Sec}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 103 leaves, 5 steps):

$$\frac{1}{f}\mathrm{AppellF1}\left[\frac{1}{2},2+p,-p,\frac{3}{2},\mathrm{Sin}[e+f x]^2,\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right]$$
$$\left(\mathrm{Cos}[e+f x]^2\right)^p\mathrm{Sin}[e+f x]\left(\mathrm{Sec}[e+f x]^2\left(a+b-a\,\mathrm{Sin}[e+f x]^2\right)\right)^p\left(1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 124 leaves, 5 steps):

$$\frac{1}{f}\mathrm{AppellF1}\left[\frac{1}{2},2+p,-p,\frac{3}{2},\mathrm{Sin}[e+f x]^2,\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right]\left(\mathrm{Cos}[e+f x]^2\right)^p$$
$$\left(b+a\,\mathrm{Cos}[e+f x]^2\right)^{-p}\left(a+b\,\mathrm{Sec}[e+f x]^2\right)^p\mathrm{Sin}[e+f x]\left(a+b-a\,\mathrm{Sin}[e+f x]^2\right)^p\left(1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right)^{-p}$$

Problem 300: Result valid but suboptimal antiderivative.

$$\int \mathrm{Sec}[e+f x]\ \left(a+b\,\mathrm{Sec}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 103 leaves, 5 steps):

$$\frac{1}{f}\mathrm{AppellF1}\left[\frac{1}{2},\ 1+p,\ -p,\ \frac{3}{2},\ \mathrm{Sin}[e+f x]^2,\ \frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right] \left(\mathrm{Cos}[e+f x]^2\right)^p \mathrm{Sin}[e+f x]\ \left(\mathrm{Sec}[e+f x]^2\ \left(a+b-a\,\mathrm{Sin}[e+f x]^2\right)\right)^p \left(1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 124 leaves, 5 steps):

$$\frac{1}{f}\mathrm{AppellF1}\left[\frac{1}{2},\ 1+p,\ -p,\ \frac{3}{2},\ \mathrm{Sin}[e+f x]^2,\ \frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right] \left(\mathrm{Cos}[e+f x]^2\right)^p \left(b+a\,\mathrm{Cos}[e+f x]^2\right)^{-p} \left(a+b\,\mathrm{Sec}[e+f x]^2\right)^p \mathrm{Sin}[e+f x]\ \left(a+b-a\,\mathrm{Sin}[e+f x]^2\right)^p \left(1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right)^{-p}$$

Problem 301: Result valid but suboptimal antiderivative.

$$\int \mathrm{Cos}[e+f x]\ \left(a+b\,\mathrm{Sec}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 101 leaves, 5 steps):

$$\frac{1}{f}\mathrm{AppellF1}\left[\frac{1}{2},\ p,\ -p,\ \frac{3}{2},\ \mathrm{Sin}[e+f x]^2,\ \frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right] \left(\mathrm{Cos}[e+f x]^2\right)^p \mathrm{Sin}[e+f x]\ \left(\mathrm{Sec}[e+f x]^2\ \left(a+b-a\,\mathrm{Sin}[e+f x]^2\right)\right)^p \left(1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 122 leaves, 5 steps):

$$\frac{1}{f}\mathrm{AppellF1}\left[\frac{1}{2},\ p,\ -p,\ \frac{3}{2},\ \mathrm{Sin}[e+f x]^2,\ \frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right] \left(\mathrm{Cos}[e+f x]^2\right)^p \left(b+a\,\mathrm{Cos}[e+f x]^2\right)^{-p} \left(a+b\,\mathrm{Sec}[e+f x]^2\right)^p \mathrm{Sin}[e+f x]\ \left(a+b-a\,\mathrm{Sin}[e+f x]^2\right)^p \left(1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}\right)^{-p}$$

Problem 302: Result valid but suboptimal antiderivative.

$$\int \mathrm{Cos}[e+f x]^3\ \left(a+b\,\mathrm{Sec}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 103 leaves, 5 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},-1+p,-p,\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]$$
$$\left(\text{Cos}[e+f x]^2\right)^p\text{Sin}[e+f x]\left(\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)\right)^p\left(1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 124 leaves, 5 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},-1+p,-p,\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\left(\text{Cos}[e+f x]^2\right)^p$$
$$\left(b+a\,\text{Cos}[e+f x]^2\right)^{-p}\left(a+b\,\text{Sec}[e+f x]^2\right)^p\text{Sin}[e+f x]\left(a+b-a\,\text{Sin}[e+f x]^2\right)^p\left(1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)^{-p}$$

Problem 303: Result valid but suboptimal antiderivative.

$$\int\text{Cos}[e+f x]^5\left(a+b\,\text{Sec}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 103 leaves, 5 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},-2+p,-p,\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]$$
$$\left(\text{Cos}[e+f x]^2\right)^p\text{Sin}[e+f x]\left(\text{Sec}[e+f x]^2\left(a+b-a\,\text{Sin}[e+f x]^2\right)\right)^p\left(1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 124 leaves, 5 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},-2+p,-p,\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\left(\text{Cos}[e+f x]^2\right)^p$$
$$\left(b+a\,\text{Cos}[e+f x]^2\right)^{-p}\left(a+b\,\text{Sec}[e+f x]^2\right)^p\text{Sin}[e+f x]\left(a+b-a\,\text{Sin}[e+f x]^2\right)^p\left(1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)^{-p}$$

Test results for the 46 problems in "4.5.10 (c+d x)^m (a+b sec)^n.m"

Test results for the 83 problems in "4.5.11 (e x)^m (a+b sec(c+d x^n))^p.m"

Test results for the 70 problems in "4.6.0 (a csc)^m (b trg)^n.m"

Test results for the 59 problems in "4.6.1.2 (d csc)^n (a+b csc)^m.m"

Test results for the 16 problems in "4.6.1.3 (d cos)^n (a+b csc)^m.m"

Test results for the 23 problems in "4.6.1.4 (d cot)^n (a+b csc)^m.m"

Test results for the 24 problems in "4.6.3.1 (a+b csc)^m (d csc)^n (A+B csc).m"

Test results for the 1 problems in "4.6.4.2 (a+b csc)^m (d csc)^n (A+B csc+C csc^2).m"

Test results for the 27 problems in "4.6.7 (d trig)^m (a+b (c csc)^n)^p.m"

Test results for the 84 problems in "4.6.11 (e x)^m (a+b csc(c+d x^n))^p.m"

Test results for the 254 problems in "4.7.1 (c trig)^m (d trig)^n.m"

Test results for the 294 problems in "4.7.2 trig^m (a trig+b trig)^n.m"

Problem 15: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Sin}[x]^3}{(a\,\text{Cos}[x]+b\,\text{Sin}[x])^2}\,dx$$

Optimal (type 3, 107 leaves, ? steps):

$$\frac{6\,a^2\,b\,\text{ArcTanh}\left[\frac{-b+a\,\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^2+b^2}}\right]}{\left(a^2+b^2\right)^{5/2}}+\frac{3\,a\,\left(a^2-b^2\right)+a\,\left(a^2+b^2\right)\,\text{Cos}[2\,x]-b\,\left(a^2+b^2\right)\,\text{Sin}[2\,x]}{2\,\left(a^2+b^2\right)^2\,\left(a\,\text{Cos}[x]+b\,\text{Sin}[x]\right)}$$

Result (type 3, 283 leaves, 19 steps):

$$-\frac{3\,a^2\,\text{ArcTanh}\left[\frac{b\,\text{Cos}[x]-a\,\text{Sin}[x]}{\sqrt{a^2+b^2}}\right]}{b\,\left(a^2+b^2\right)^{3/2}}-\frac{2\,a^2\,b\,\text{ArcTanh}\left[\frac{b-a\,\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^2+b^2}}\right]}{\left(a^2+b^2\right)^{5/2}}+\frac{2\,a^2\,\left(3\,a^2+b^2\right)\,\text{ArcTanh}\left[\frac{b-a\,\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^2+b^2}}\right]}{b\,\left(a^2+b^2\right)^{5/2}}-\frac{\text{Cos}[x]}{b^2}+$$

$$\frac{3\,a^2\,\text{Cos}[x]}{b^2\,\left(a^2+b^2\right)}-\frac{2\,a\,\text{Sin}[x]}{b^3}+\frac{3\,a^3\,\text{Sin}[x]}{b^3\,\left(a^2+b^2\right)}-\frac{2\,a^3\,\text{Cos}\left[\frac{x}{2}\right]^2\,\left(2\,a\,b+\left(a^2-b^2\right)\,\text{Tan}\left[\frac{x}{2}\right]\right)}{b^3\,\left(a^2+b^2\right)^2}+\frac{2\,a^2\,\left(a+b\,\text{Tan}\left[\frac{x}{2}\right]\right)}{\left(a^2+b^2\right)^2\,\left(a+2\,b\,\text{Tan}\left[\frac{x}{2}\right]-a\,\text{Tan}\left[\frac{x}{2}\right]^2\right)}$$

Problem 23: Result valid but suboptimal antiderivative.

$$\int \frac{\mathrm{Sin}[x]^2}{(a\,\mathrm{Cos}[x]+b\,\mathrm{Sin}[x])^3}\,dx$$

Optimal (type 3, 92 leaves, ? steps):

$$-\frac{\left(a^2-2\,b^2\right)\,\mathrm{ArcTanh}\left[\frac{-b+a\,\mathrm{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^2+b^2}}\right]}{\left(a^2+b^2\right)^{5/2}}+\frac{a\,\left(3\,a\,b\,\mathrm{Cos}[x]+\left(a^2+4\,b^2\right)\,\mathrm{Sin}[x]\right)}{2\,\left(a^2+b^2\right)^2\,\left(a\,\mathrm{Cos}[x]+b\,\mathrm{Sin}[x]\right)^2}$$

Result (type 3, 300 leaves, 13 steps):

$$\frac{2\,a^2\,\mathrm{ArcTanh}\left[\frac{b\,\mathrm{Cos}[x]-a\,\mathrm{Sin}[x]}{\sqrt{a^2+b^2}}\right]}{b^2\,\left(a^2+b^2\right)^{3/2}}-\frac{\mathrm{ArcTanh}\left[\frac{b\,\mathrm{Cos}[x]-a\,\mathrm{Sin}[x]}{\sqrt{a^2+b^2}}\right]}{b^2\,\sqrt{a^2+b^2}}-\frac{a^2\,\left(2\,a^2-b^2\right)\,\mathrm{ArcTanh}\left[\frac{b-a\,\mathrm{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^2+b^2}}\right]}{b^2\,\left(a^2+b^2\right)^{5/2}}+$$
$$\frac{2\,a}{b\,\left(a^2+b^2\right)\,\left(a\,\mathrm{Cos}[x]+b\,\mathrm{Sin}[x]\right)}+\frac{2\,\left(a\,b+\left(a^2+2\,b^2\right)\,\mathrm{Tan}\left[\frac{x}{2}\right]\right)}{a\,\left(a^2+b^2\right)\,\left(a+2\,b\,\mathrm{Tan}\left[\frac{x}{2}\right]-a\,\mathrm{Tan}\left[\frac{x}{2}\right]^2\right)^2}-\frac{4\,a^4+3\,a^2\,b^2+2\,b^4+a\,b\,\left(5\,a^2+2\,b^2\right)\,\mathrm{Tan}\left[\frac{x}{2}\right]}{a\,b\,\left(a^2+b^2\right)^2\,\left(a+2\,b\,\mathrm{Tan}\left[\frac{x}{2}\right]-a\,\mathrm{Tan}\left[\frac{x}{2}\right]^2\right)}$$

Problem 123: Result valid but suboptimal antiderivative.

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

Optimal (type 3, 138 leaves, ? steps):

$$-\frac{3\,a\,b^2\,\mathrm{ArcTanh}\left[\frac{b\,\mathrm{Cos}[c+d\,x]-a\,\mathrm{Sin}[c+d\,x]}{\sqrt{a^2+b^2}}\right]}{\left(a^2+b^2\right)^{5/2}\,d}+\frac{2\,a\,b\,\mathrm{Cos}[c+d\,x]}{\left(a^2+b^2\right)^2\,d}+\frac{\left(a^2-b^2\right)\,\mathrm{Sin}[c+d\,x]}{\left(a^2+b^2\right)^2\,d}-\frac{b^3}{\left(a^2+b^2\right)^2\,d\,\left(a\,\mathrm{Cos}[c+d\,x]+b\,\mathrm{Sin}[c+d\,x]\right)}$$

Result (type 3, 231 leaves, 11 steps):

$$\frac{2\,b^4\,\mathrm{ArcTanh}\left[\frac{b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2+b^2}}\right]}{a\,\left(a^2+b^2\right)^{5/2}\,d}-\frac{2\,b^2\,\left(3\,a^2+b^2\right)\,\mathrm{ArcTanh}\left[\frac{b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2+b^2}}\right]}{a\,\left(a^2+b^2\right)^{5/2}\,d}+$$
$$\frac{2\,\left(2\,a\,b+\left(a^2-b^2\right)\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\left(a^2+b^2\right)^2\,d\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)}-\frac{2\,b^3\,\left(a+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{a\,\left(a^2+b^2\right)^2\,d\,\left(a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)}$$

Problem 131: Result valid but suboptimal antiderivative.

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

Optimal (type 3, 216 leaves, ? steps):

$$-\frac{3 b^2 \left(4 a^2-b^2\right) \text{ArcTanh}\left[\frac{b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2+b^2}}\right]}{\left(a^2+b^2\right)^{7/2} d}+\frac{b \left(3 a^2-b^2\right) \text{Cos}[c+d x]}{\left(a^2+b^2\right)^3 d}+\frac{a \left(a^2-3 b^2\right) \text{Sin}[c+d x]}{\left(a^2+b^2\right)^3 d}+\frac{b^4 \text{Sin}[c+d x]}{2 a \left(a^2+b^2\right)^2 d (a \text{Cos}[c+d x]+b \text{Sin}[c+d x])^2}-\frac{b^3 \left(8 a^2+b^2\right)}{2 a \left(a^2+b^2\right)^3 d (a \text{Cos}[c+d x]+b \text{Sin}[c+d x])}$$

Result (type 3, 492 leaves, 15 steps):

$$-\frac{3 b^4 \left(a^2+2 b^2\right) \text{ArcTanh}\left[\frac{b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2+b^2}}\right]}{a^2 \left(a^2+b^2\right)^{7/2} d}+\frac{4 b^4 \left(3 a^2+2 b^2\right) \text{ArcTanh}\left[\frac{b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2+b^2}}\right]}{a^2 \left(a^2+b^2\right)^{7/2} d}-\frac{2 b^2 \left(6 a^4+3 a^2 b^2+b^4\right) \text{ArcTanh}\left[\frac{b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2+b^2}}\right]}{a^2 \left(a^2+b^2\right)^{7/2} d}+\frac{2 \left(b \left(3 a^2-b^2\right)+a \left(a^2-3 b^2\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)}{\left(a^2+b^2\right)^3 d \left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}+\frac{2 b^4 \left(a b+\left(a^2+2 b^2\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)}{a^3 \left(a^2+b^2\right)^2 d \left(a+2 b \text{Tan}\left[\frac{1}{2} (c+d x)\right]-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^2}-\frac{3 b^4 \left(a^2+2 b^2\right) \left(b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)}{a^3 \left(a^2+b^2\right)^3 d \left(a+2 b \text{Tan}\left[\frac{1}{2} (c+d x)\right]-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}-\frac{4 b^3 \left(2 a^4-b^4+a b \left(3 a^2+2 b^2\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)}{a^3 \left(a^2+b^2\right)^3 d \left(a+2 b \text{Tan}\left[\frac{1}{2} (c+d x)\right]-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}$$

Problem 133: Result valid but suboptimal antiderivative.

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

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

$$\frac{\left(2 a^2-b^2\right) \text{ArcTanh}\left[\frac{-b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2+b^2}}\right]}{\left(a^2+b^2\right)^{5/2} d}-\frac{b \left(\left(4 a^2+b^2\right) \text{Cos}[c+d x]+3 a b \text{Sin}[c+d x]\right)}{2 \left(a^2+b^2\right)^2 d (a \text{Cos}[c+d x]+b \text{Sin}[c+d x])^2}$$

Result (type 3, 225 leaves, 6 steps):

$$-\frac{\left(2 a^2-b^2\right) \text{ArcTanh}\left[\frac{b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2+b^2}}\right]}{\left(a^2+b^2\right)^{5/2} d}+\frac{2 b^2 \left(a b+\left(a^2+2 b^2\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)}{a^3 \left(a^2+b^2\right) d \left(a+2 b \text{Tan}\left[\frac{1}{2} (c+d x)\right]-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^2}-$$
$$\frac{b \left(4 a^4+3 a^2 b^2+2 b^4+a b \left(5 a^2+2 b^2\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)}{a^3 \left(a^2+b^2\right)^2 d \left(a+2 b \text{Tan}\left[\frac{1}{2} (c+d x)\right]-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}$$

Problem 142: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^3}{\left(a \text{Cos}[c+d x]+b \text{Sin}[c+d x]\right)^4} \, dx$$

Optimal (type 3, 157 leaves, ? steps):

$$\frac{a \left(2 a^2-3 b^2\right) \text{ArcTanh}\left[\frac{-b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2+b^2}}\right]}{\left(a^2+b^2\right)^{7/2} d}+\frac{-3 \left(3 a^4 b-a^2 b^3+b^5\right) \text{Cos}[2 (c+d x)]+\frac{1}{2} b \left(-9 a^2+b^2\right) \left(2 \left(a^2+b^2\right)+3 a b \text{Sin}[2 (c+d x)]\right)}{6 \left(a^2+b^2\right)^3 d \left(a \text{Cos}[c+d x]+b \text{Sin}[c+d x]\right)^3}$$

Result (type 3, 362 leaves, 7 steps):

$$-\frac{a \left(2 a^2-3 b^2\right) \text{ArcTanh}\left[\frac{b-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2+b^2}}\right]}{\left(a^2+b^2\right)^{7/2} d}-\frac{8 b^3 \left(a \left(a^2+2 b^2\right)+b \left(3 a^2+4 b^2\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)}{3 a^5 \left(a^2+b^2\right) d \left(a+2 b \text{Tan}\left[\frac{1}{2} (c+d x)\right]-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^3}+$$
$$\frac{2 b^2 \left(b \left(15 a^4+18 a^2 b^2+8 b^4\right)+a \left(9 a^4+30 a^2 b^2+16 b^4\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)}{3 a^5 \left(a^2+b^2\right)^2 d \left(a+2 b \text{Tan}\left[\frac{1}{2} (c+d x)\right]-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^2}-$$
$$\frac{b \left(6 a^6+9 a^4 b^2+12 a^2 b^4+4 b^6+a b \left(9 a^4+6 a^2 b^2+2 b^4\right) \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)}{a^4 \left(a^2+b^2\right)^3 d \left(a+2 b \text{Tan}\left[\frac{1}{2} (c+d x)\right]-a \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}$$

Test results for the 397 problems in "4.7.3 (c+d x)^m trig^n trig^p.m"

Test results for the 9 problems in "4.7.4 x^m (a+b trig^n)^p.m"

Test results for the 330 problems in "4.7.5 x^m trig(a+b log(c x^n))^p.m"

Problem 135: Unable to integrate problem.

$$\int x^3 \operatorname{Tan}[a + i \operatorname{Log}[x]] \, dx$$

Optimal (type 3, 47 leaves, 5 steps):

$$-i e^{2 i a} x^2 + \frac{i x^4}{4} + i e^{4 i a} \operatorname{Log}\left[e^{2 i a} + x^2\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\operatorname{CannotIntegrate}\left[x^3 \operatorname{Tan}[a + i \operatorname{Log}[x]], x\right]$$

Problem 136: Unable to integrate problem.

$$\int x^2 \operatorname{Tan}[a + i \operatorname{Log}[x]] \, dx$$

Optimal (type 3, 43 leaves, 5 steps):

$$-2 i e^{2 i a} x + \frac{i x^3}{3} + 2 i e^{3 i a} \operatorname{ArcTan}\left[e^{-i a} x\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\operatorname{CannotIntegrate}\left[x^2 \operatorname{Tan}[a + i \operatorname{Log}[x]], x\right]$$

Problem 137: Unable to integrate problem.

$$\int x \operatorname{Tan}[a + i \operatorname{Log}[x]] \, dx$$

Optimal (type 3, 33 leaves, 5 steps):

$$\frac{i x^2}{2} - i e^{2 i a} \operatorname{Log}\left[e^{2 i a} + x^2\right]$$

Result (type 8, 13 leaves, 0 steps):

$\text{CannotIntegrate}[x \tan[a + i \log[x]], x]$

Problem 138: Unable to integrate problem.

$$\int \tan[a + i \log[x]] \, dx$$

Optimal (type 3, 27 leaves, 4 steps):

$$i x - 2 i e^{i a} \text{ArcTan}\left[e^{-i a} x\right]$$

Result (type 8, 11 leaves, 0 steps):

$\text{CannotIntegrate}[\tan[a + i \log[x]], x]$

Problem 140: Unable to integrate problem.

$$\int \frac{\tan[a + i \log[x]]}{x^2} \, dx$$

Optimal (type 3, 29 leaves, 4 steps):

$$\frac{i}{x} + 2 i e^{-i a} \text{ArcTan}\left[e^{-i a} x\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\tan[a + i \log[x]]}{x^2}, x\right]$$

Problem 141: Unable to integrate problem.

$$\int \frac{\tan[a + i \log[x]]}{x^3} \, dx$$

Optimal (type 3, 35 leaves, 4 steps):

$$\frac{i}{2 x^2} - i e^{-2 i a} \log\left[1 + \frac{e^{2 i a}}{x^2}\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\tan[a + i \log[x]]}{x^3}, x\right]$$

Problem 142: Unable to integrate problem.

$$\int \frac{\text{Tan}[a + i\, \text{Log}[x]]}{x^4}\, dx$$

Optimal (type 3, 45 leaves, 5 steps):

$$\frac{i}{3\, x^3} - \frac{2\, i\, e^{-2\, i\, a}}{x} - 2\, i\, e^{-3\, i\, a}\, \text{ArcTan}\left[e^{-i\, a}\, x\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Tan}[a + i\, \text{Log}[x]]}{x^4},\, x\right]$$

Problem 143: Unable to integrate problem.

$$\int x^3\, \text{Tan}[a + i\, \text{Log}[x]]^2\, dx$$

Optimal (type 3, 63 leaves, 5 steps):

$$2\, e^{2\, i\, a}\, x^2 - \frac{x^4}{4} - \frac{2\, e^{6\, i\, a}}{e^{2\, i\, a} + x^2} - 4\, e^{4\, i\, a}\, \text{Log}\left[e^{2\, i\, a} + x^2\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^3\, \text{Tan}[a + i\, \text{Log}[x]]^2,\, x\right]$$

Problem 144: Unable to integrate problem.

$$\int x^2\, \text{Tan}[a + i\, \text{Log}[x]]^2\, dx$$

Optimal (type 3, 62 leaves, 6 steps):

$$6\, e^{2\, i\, a}\, x - \frac{x^3}{3} - \frac{2\, e^{2\, i\, a}\, x^3}{e^{2\, i\, a} + x^2} - 6\, e^{3\, i\, a}\, \text{ArcTan}\left[e^{-i\, a}\, x\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^2\, \text{Tan}[a + i\, \text{Log}[x]]^2,\, x\right]$$

Problem 145: Unable to integrate problem.

$$\int x \operatorname{Tan}[a + i \operatorname{Log}[x]]^2 \, dx$$

Optimal (type 3, 51 leaves, 5 steps):

$$-\frac{x^2}{2} + \frac{2 e^{4 i a}}{e^{2 i a} + x^2} + 2 e^{2 i a} \operatorname{Log}\left[e^{2 i a} + x^2\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\operatorname{CannotIntegrate}\left[x \operatorname{Tan}[a + i \operatorname{Log}[x]]^2, x\right]$$

Problem 146: Unable to integrate problem.

$$\int \operatorname{Tan}[a + i \operatorname{Log}[x]]^2 \, dx$$

Optimal (type 3, 46 leaves, 6 steps):

$$-x - \frac{2 e^{2 i a} x}{e^{2 i a} + x^2} + 2 e^{i a} \operatorname{ArcTan}\left[e^{-i a} x\right]$$

Result (type 8, 13 leaves, 0 steps):

$$\operatorname{CannotIntegrate}\left[\operatorname{Tan}[a + i \operatorname{Log}[x]]^2, x\right]$$

Problem 148: Unable to integrate problem.

$$\int \frac{\operatorname{Tan}[a + i \operatorname{Log}[x]]^2}{x^2} \, dx$$

Optimal (type 3, 60 leaves, 5 steps):

$$\frac{e^{2 i a}}{x \left(e^{2 i a} + x^2\right)} + \frac{3 x}{e^{2 i a} + x^2} + 2 e^{-i a} \operatorname{ArcTan}\left[e^{-i a} x\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\operatorname{CannotIntegrate}\left[\frac{\operatorname{Tan}[a + i \operatorname{Log}[x]]^2}{x^2}, x\right]$$

Problem 149: Unable to integrate problem.

$$\int \frac{\text{Tan}[a + i \text{Log}[x]]^2}{x^3} \, dx$$

Optimal (type 3, 55 leaves, 4 steps):

$$-\frac{2 e^{-2 i a}}{1 + \frac{e^{2 i a}}{x^2}} + \frac{1}{2 x^2} - 2 e^{-2 i a} \text{Log}\left[1 + \frac{e^{2 i a}}{x^2}\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Tan}[a + i \text{Log}[x]]^2}{x^3}, x\right]$$

Problem 150: Unable to integrate problem.

$$\int (e x)^m \text{Tan}[a + i \text{Log}[x]] \, dx$$

Optimal (type 5, 71 leaves, 4 steps):

$$-\frac{i (e x)^{1+m}}{e (1 + m)} + \frac{2 i (e x)^{1+m} \text{Hypergeometric2F1}\left[1, \frac{1}{2} (-1 - m), \frac{1-m}{2}, -\frac{e^{2 i a}}{x^2}\right]}{e (1 + m)}$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e x)^m \text{Tan}[a + i \text{Log}[x]], x\right]$$

Problem 151: Unable to integrate problem.

$$\int (e x)^m \text{Tan}[a + i \text{Log}[x]]^2 \, dx$$

Optimal (type 5, 77 leaves, 5 steps):

$$-\frac{x (e x)^m}{1 + m} + \frac{2 x (e x)^m}{1 + \frac{e^{2 i a}}{x^2}} - 2 x (e x)^m \text{Hypergeometric2F1}\left[1, \frac{1}{2} (-1 - m), \frac{1 - m}{2}, -\frac{e^{2 i a}}{x^2}\right]$$

Result (type 8, 19 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e x)^m \text{Tan}[a + i \text{Log}[x]]^2, x\right]$$

Problem 152: Unable to integrate problem.

$$\int (e\,x)^m \operatorname{Tan}[a+i \operatorname{Log}[x]]^3\,dx$$

Optimal (type 5, 184 leaves, 6 steps):

$$-\frac{i\,(1-m)\,m\,x\,(e\,x)^m}{2\,(1+m)}+\frac{i\left(1-\frac{e^{2\,i\,a}}{x^2}\right)^2 x\,(e\,x)^m}{2\left(1+\frac{e^{2\,i\,a}}{x^2}\right)^2}+\frac{i\,e^{-2\,i\,a}\left(e^{2\,i\,a}\,(3+m)+\frac{e^{4\,i\,a}\,(1-m)}{x^2}\right)x\,(e\,x)^m}{2\left(1+\frac{e^{2\,i\,a}}{x^2}\right)}-\frac{i\,(3+2\,m+m^2)\,x\,(e\,x)^m \operatorname{Hypergeometric2F1}\left[1,\frac{1}{2}\,(-1-m),\frac{1-m}{2},-\frac{e^{2\,i\,a}}{x^2}\right]}{1+m}$$

Result (type 8, 19 leaves, 0 steps):

$$\operatorname{CannotIntegrate}\left[(e\,x)^m \operatorname{Tan}[a+i \operatorname{Log}[x]]^3,\,x\right]$$

Problem 153: Unable to integrate problem.

$$\int \operatorname{Tan}[a+b \operatorname{Log}[x]]^p\,dx$$

Optimal (type 6, 142 leaves, 4 steps):

$$x\left(1-e^{2\,i\,a}\,x^{2\,i\,b}\right)^{-p}\left(\frac{i\left(1-e^{2\,i\,a}\,x^{2\,i\,b}\right)}{1+e^{2\,i\,a}\,x^{2\,i\,b}}\right)^p\left(1+e^{2\,i\,a}\,x^{2\,i\,b}\right)^p \operatorname{AppellF1}\left[-\frac{i}{2\,b},-p,p,1-\frac{i}{2\,b},e^{2\,i\,a}\,x^{2\,i\,b},-e^{2\,i\,a}\,x^{2\,i\,b}\right]$$

Result (type 8, 11 leaves, 0 steps):

$$\operatorname{CannotIntegrate}\left[\operatorname{Tan}[a+b \operatorname{Log}[x]]^p,\,x\right]$$

Problem 154: Unable to integrate problem.

$$\int (e\,x)^m \operatorname{Tan}[a+b \operatorname{Log}[x]]^p\,dx$$

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

$$\frac{1}{e\,(1+m)}(e\,x)^{1+m}\left(1-e^{2\,i\,a}\,x^{2\,i\,b}\right)^{-p}\left(\frac{i\left(1-e^{2\,i\,a}\,x^{2\,i\,b}\right)}{1+e^{2\,i\,a}\,x^{2\,i\,b}}\right)^p\left(1+e^{2\,i\,a}\,x^{2\,i\,b}\right)^p \operatorname{AppellF1}\left[-\frac{i\,(1+m)}{2\,b},-p,p,1-\frac{i\,(1+m)}{2\,b},e^{2\,i\,a}\,x^{2\,i\,b},-e^{2\,i\,a}\,x^{2\,i\,b}\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\operatorname{CannotIntegrate}\left[(e\,x)^m \operatorname{Tan}[a+b \operatorname{Log}[x]]^p,\,x\right]$$

Problem 155: Unable to integrate problem.

$$\int \mathrm{Tan}[a+\mathrm{Log}[x]]^p \, dx$$

Optimal (type 6, 120 leaves, 4 steps):

$$\left(1-e^{2 i a} x^{2 i}\right)^{-p} \left(\frac{i \left(1-e^{2 i a} x^{2 i}\right)}{1+e^{2 i a} x^{2 i}}\right)^p \left(1+e^{2 i a} x^{2 i}\right)^p x \,\mathrm{AppellF1}\left[-\frac{i}{2}, -p, p, 1-\frac{i}{2}, e^{2 i a} x^{2 i}, -e^{2 i a} x^{2 i}\right]$$

Result (type 8, 9 leaves, 0 steps):

$$\mathrm{CannotIntegrate}\left[\mathrm{Tan}[a+\mathrm{Log}[x]]^p, x\right]$$

Problem 156: Unable to integrate problem.

$$\int \mathrm{Tan}[a+2\,\mathrm{Log}[x]]^p \, dx$$

Optimal (type 6, 120 leaves, 4 steps):

$$\left(1-e^{2 i a} x^{4 i}\right)^{-p} \left(\frac{i \left(1-e^{2 i a} x^{4 i}\right)}{1+e^{2 i a} x^{4 i}}\right)^p \left(1+e^{2 i a} x^{4 i}\right)^p x \,\mathrm{AppellF1}\left[-\frac{i}{4}, -p, p, 1-\frac{i}{4}, e^{2 i a} x^{4 i}, -e^{2 i a} x^{4 i}\right]$$

Result (type 8, 11 leaves, 0 steps):

$$\mathrm{CannotIntegrate}\left[\mathrm{Tan}[a+2\,\mathrm{Log}[x]]^p, x\right]$$

Problem 157: Unable to integrate problem.

$$\int \mathrm{Tan}[a+3\,\mathrm{Log}[x]]^p \, dx$$

Optimal (type 6, 120 leaves, 4 steps):

$$\left(1-e^{2 i a} x^{6 i}\right)^{-p} \left(\frac{i \left(1-e^{2 i a} x^{6 i}\right)}{1+e^{2 i a} x^{6 i}}\right)^p \left(1+e^{2 i a} x^{6 i}\right)^p x \,\mathrm{AppellF1}\left[-\frac{i}{6}, -p, p, 1-\frac{i}{6}, e^{2 i a} x^{6 i}, -e^{2 i a} x^{6 i}\right]$$

Result (type 8, 11 leaves, 0 steps):

$$\mathrm{CannotIntegrate}\left[\mathrm{Tan}[a+3\,\mathrm{Log}[x]]^p, x\right]$$

Problem 158: Unable to integrate problem.

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

Optimal (type 5, 71 leaves, 4 steps):

$$-\frac{i x^4}{4} + \frac{1}{2} i x^4 \operatorname{Hypergeometric2F1}\left[1, -\frac{2 i}{b d n}, 1 - \frac{2 i}{b d n}, -e^{2 i a d} (c x^n)^{2 i b d}\right]$$

Result (type 8, 19 leaves, 0 steps):

CannotIntegrate[x^3 Tan[d (a + b Log[c x^n])], x]

Problem 159: Unable to integrate problem.

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

Optimal (type 5, 75 leaves, 4 steps):

$$-\frac{i x^3}{3} + \frac{2}{3} i x^3 \operatorname{Hypergeometric2F1}\left[1, -\frac{3 i}{2 b d n}, 1 - \frac{3 i}{2 b d n}, -e^{2 i a d} (c x^n)^{2 i b d}\right]$$

Result (type 8, 19 leaves, 0 steps):

CannotIntegrate[x^2 Tan[d (a + b Log[c x^n])], x]

Problem 160: Unable to integrate problem.

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

Optimal (type 5, 69 leaves, 4 steps):

$$-\frac{i x^2}{2} + i x^2 \operatorname{Hypergeometric2F1}\left[1, -\frac{i}{b d n}, 1 - \frac{i}{b d n}, -e^{2 i a d} (c x^n)^{2 i b d}\right]$$

Result (type 8, 17 leaves, 0 steps):

CannotIntegrate[x Tan[d (a + b Log[c x^n])], x]

Problem 161: Unable to integrate problem.

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

Optimal (type 5, 67 leaves, 4 steps):

$$-i x+2 i x \text{Hypergeometric2F1}\left[1,-\frac{i}{2 b d n}, 1-\frac{i}{2 b d n},-e^{2 i a d}\left(c x^{n}\right)^{2 i b d}\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Tan}\left[d\left(a+b \text{Log}\left[c x^{n}\right]\right)\right], x\right]$$

Problem 163: Unable to integrate problem.

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

Optimal (type 5, 71 leaves, 4 steps):

$$\frac{i}{x}-\frac{2 i \text{Hypergeometric2F1}\left[1, \frac{i}{2 b d n}, 1+\frac{i}{2 b d n},-e^{2 i a d}\left(c x^{n}\right)^{2 i b d}\right]}{x}$$

Result (type 8, 19 leaves, 0 steps):

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

Problem 164: Unable to integrate problem.

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

Optimal (type 5, 69 leaves, 4 steps):

$$\frac{i}{2 x^{2}}-\frac{i \text{Hypergeometric2F1}\left[1, \frac{i}{b d n}, 1+\frac{i}{b d n},-e^{2 i a d}\left(c x^{n}\right)^{2 i b d}\right]}{x^{2}}$$

Result (type 8, 19 leaves, 0 steps):

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

Problem 165: Unable to integrate problem.

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

Optimal (type 5, 159 leaves, 5 steps):

$$\frac{(4\,i-b\,d\,n)\,x^4}{4\,b\,d\,n}+\frac{i\,x^4\left(1-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}{b\,d\,n\left(1+e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}-\frac{2\,i\,x^4\,\text{Hypergeometric2F1}\left[1,-\frac{2\,i}{b\,d\,n},1-\frac{2\,i}{b\,d\,n},-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right]}{b\,d\,n}$$

Result (type 8, 21 leaves, 0 steps):

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

Problem 166: Unable to integrate problem.

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

Optimal (type 5, 163 leaves, 5 steps):

$$\frac{(3\,i-b\,d\,n)\,x^3}{3\,b\,d\,n}+\frac{i\,x^3\left(1-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}{b\,d\,n\left(1+e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}-\frac{2\,i\,x^3\,\text{Hypergeometric2F1}\left[1,-\frac{3\,i}{2\,b\,d\,n},1-\frac{3\,i}{2\,b\,d\,n},-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right]}{b\,d\,n}$$

Result (type 8, 21 leaves, 0 steps):

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

Problem 167: Unable to integrate problem.

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

Optimal (type 5, 159 leaves, 5 steps):

$$\frac{(2\,i-b\,d\,n)\,x^2}{2\,b\,d\,n}+\frac{i\,x^2\left(1-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}{b\,d\,n\left(1+e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}-\frac{2\,i\,x^2\,\text{Hypergeometric2F1}\left[1,-\frac{i}{b\,d\,n},1-\frac{i}{b\,d\,n},-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right]}{b\,d\,n}$$

Result (type 8, 19 leaves, 0 steps):

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

Problem 168: Unable to integrate problem.

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

Optimal (type 5, 154 leaves, 5 steps):

$$\frac{(i-b\,d\,n)\,x}{b\,d\,n}+\frac{i\,x\left(1-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}{b\,d\,n\left(1+e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}-\frac{2\,i\,x\,\text{Hypergeometric2F1}\left[1,-\frac{i}{2\,b\,d\,n},1-\frac{i}{2\,b\,d\,n},-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right]}{b\,d\,n}$$

Result (type 8, 17 leaves, 0 steps):

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

Problem 170: Unable to integrate problem.

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

Optimal (type 5, 157 leaves, 5 steps):

$$\frac{1+\frac{i}{b\,d\,n}}{x}+\frac{i\left(1-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}{b\,d\,n\,x\left(1+e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}-\frac{2\,i\,\text{Hypergeometric2F1}\left[1,\frac{i}{2\,b\,d\,n},1+\frac{i}{2\,b\,d\,n},-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right]}{b\,d\,n\,x}$$

Result (type 8, 21 leaves, 0 steps):

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

Problem 171: Unable to integrate problem.

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

Optimal (type 5, 156 leaves, 5 steps):

$$\frac{1+\frac{2\,i}{b\,d\,n}}{2\,x^2}+\frac{i\left(1-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}{b\,d\,n\,x^2\left(1+e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}-\frac{2\,i\,\text{Hypergeometric2F1}\left[1,\frac{i}{b\,d\,n},1+\frac{i}{b\,d\,n},-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right]}{b\,d\,n\,x^2}$$

Result (type 8, 21 leaves, 0 steps):

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

Problem 175: Unable to integrate problem.

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

Optimal (type 5, 101 leaves, 4 steps):

$$-\frac{i (e x)^{1+m}}{e (1+m)}+\frac{2 i (e x)^{1+m} \text{Hypergeometric2F1}\left[1,-\frac{i (1+m)}{2 b d n},1-\frac{i (1+m)}{2 b d n},-e^{2 i a d} \left(c x^n\right)^{2 i b d}\right]}{e (1+m)}$$

Result (type 8, 21 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e x)^m \text{Tan}\left[d \left(a+b \text{Log}\left[c x^n\right]\right)\right],x\right]$$

Problem 176: Unable to integrate problem.

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

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

$$\frac{(i (1+m)-b d n) (e x)^{1+m}}{b d e (1+m) n}+\frac{i (e x)^{1+m} \left(1-e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)}{b d e n \left(1+e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)}-\frac{2 i (e x)^{1+m} \text{Hypergeometric2F1}\left[1,-\frac{i (1+m)}{2 b d n},1-\frac{i (1+m)}{2 b d n},-e^{2 i a d} \left(c x^n\right)^{2 i b d}\right]}{b d e n}$$

Result (type 8, 23 leaves, 0 steps):

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

Problem 177: Unable to integrate problem.

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

Optimal (type 5, 351 leaves, 6 steps):

$$-\frac{(i (1+m)-b d n) (1+m+2 i b d n) (e x)^{1+m}}{2 b^2 d^2 e (1+m) n^2}-\frac{(e x)^{1+m} \left(1-e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)^2}{2 b d e n \left(1+e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)^2}-\frac{i e^{-2 i a d} (e x)^{1+m} \left(\frac{e^{2 i a d} (1+m-2 i b d n)}{n}-\frac{e^{4 i a d} (1+m+2 i b d n) \left(c x^n\right)^{2 i b d}}{n}\right)}{2 b^2 d^2 e n \left(1+e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)}+$$
$$\frac{i \left(1+2 m+m^2-2 b^2 d^2 n^2\right) (e x)^{1+m} \text{Hypergeometric2F1}\left[1,-\frac{i (1+m)}{2 b d n},1-\frac{i (1+m)}{2 b d n},-e^{2 i a d} \left(c x^n\right)^{2 i b d}\right]}{b^2 d^2 e (1+m) n^2}$$

Result (type 8, 23 leaves, 0 steps):

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

Problem 178: Unable to integrate problem.

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

Optimal (type 6, 190 leaves, 5 steps):

$$x\,\left(1-e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right)^{-p}\,\left(\frac{i\,\left(1-e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right)}{1+e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}}\right)^p\,\left(1+e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right)^p$$
$$\mathrm{AppellF1}\left[-\frac{i}{2\,b\,d\,n},-p,p,1-\frac{i}{2\,b\,d\,n},e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d},-e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\mathrm{CannotIntegrate}\left[\mathrm{Tan}\left[d\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)\right]^p,x\right]$$

Problem 179: Unable to integrate problem.

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

Optimal (type 6, 210 leaves, 5 steps):

$$\frac{1}{e\,\left(1+m\right)}(e\,x)^{1+m}\,\left(1-e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right)^{-p}\,\left(\frac{i\,\left(1-e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right)}{1+e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}}\right)^p$$
$$\left(1+e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right)^p\,\mathrm{AppellF1}\left[-\frac{i\,\left(1+m\right)}{2\,b\,d\,n},-p,p,1-\frac{i\,\left(1+m\right)}{2\,b\,d\,n},e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d},-e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right]$$

Result (type 8, 23 leaves, 0 steps):

$$\mathrm{CannotIntegrate}\left[(e\,x)^m\,\mathrm{Tan}\left[d\,\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)\right]^p,x\right]$$

Problem 186: Unable to integrate problem.

$$\int x^3\,\mathrm{Cot}\left[a+i\,\mathrm{Log}[x]\right]\,dx$$

Optimal (type 3, 49 leaves, 5 steps):

$$-i\,e^{2\,i\,a}\,x^2-\frac{i\,x^4}{4}-i\,e^{4\,i\,a}\,\mathrm{Log}\left[e^{2\,i\,a}-x^2\right]$$

Result (type 8, 15 leaves, 0 steps):

$\text{CannotIntegrate}\left[x^3 \,\text{Cot}[a+i\,\text{Log}[x]],x\right]$

Problem 187: Unable to integrate problem.

$$\int x^2 \,\text{Cot}[a+i\,\text{Log}[x]]\,dx$$

Optimal (type 3, 43 leaves, 5 steps):

$$-2\,i\,e^{2\,i\,a}\,x-\frac{i\,x^3}{3}+2\,i\,e^{3\,i\,a}\,\text{ArcTanh}\left[e^{-i\,a}\,x\right]$$

Result (type 8, 15 leaves, 0 steps):

$\text{CannotIntegrate}\left[x^2 \,\text{Cot}[a+i\,\text{Log}[x]],x\right]$

Problem 188: Unable to integrate problem.

$$\int x\,\text{Cot}[a+i\,\text{Log}[x]]\,dx$$

Optimal (type 3, 35 leaves, 5 steps):

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

Result (type 8, 13 leaves, 0 steps):

$\text{CannotIntegrate}[x\,\text{Cot}[a+i\,\text{Log}[x]],x]$

Problem 189: Unable to integrate problem.

$$\int \text{Cot}[a+i\,\text{Log}[x]]\,dx$$

Optimal (type 3, 27 leaves, 4 steps):

$$-i\,x+2\,i\,e^{i\,a}\,\text{ArcTanh}\left[e^{-i\,a}\,x\right]$$

Result (type 8, 11 leaves, 0 steps):

$\text{CannotIntegrate}[\text{Cot}[a+i\,\text{Log}[x]],x]$

Problem 191: Unable to integrate problem.

$$\int \frac{\text{Cot}[a + i \,\text{Log}[x]]}{x^2} \, dx$$

Optimal (type 3, 29 leaves, 4 steps):

$$-\frac{i}{x} + 2\, i\, e^{-i a} \,\text{ArcTanh}\left[e^{-i a} x\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Cot}[a + i \,\text{Log}[x]]}{x^2}, x\right]$$

Problem 192: Unable to integrate problem.

$$\int \frac{\text{Cot}[a + i \,\text{Log}[x]]}{x^3} \, dx$$

Optimal (type 3, 36 leaves, 4 steps):

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

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Cot}[a + i \,\text{Log}[x]]}{x^3}, x\right]$$

Problem 193: Unable to integrate problem.

$$\int \frac{\text{Cot}[a + i \,\text{Log}[x]]}{x^4} \, dx$$

Optimal (type 3, 45 leaves, 5 steps):

$$-\frac{i}{3 x^3} - \frac{2\, i\, e^{-2 i a}}{x} + 2\, i\, e^{-3 i a} \,\text{ArcTanh}\left[e^{-i a} x\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Cot}[a + i \,\text{Log}[x]]}{x^4}, x\right]$$

Problem 194: Unable to integrate problem.

$$\int x^3 \operatorname{Cot}[a + i \operatorname{Log}[x]]^2 \, dx$$

Optimal (type 3, 67 leaves, 5 steps):

$$-2 e^{2 i a} x^2 - \frac{x^4}{4} - \frac{2 e^{6 i a}}{e^{2 i a} - x^2} - 4 e^{4 i a} \operatorname{Log}\left[e^{2 i a} - x^2\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^3 \operatorname{Cot}[a + i \operatorname{Log}[x]]^2, x\right]$$

Problem 195: Unable to integrate problem.

$$\int x^2 \operatorname{Cot}[a + i \operatorname{Log}[x]]^2 \, dx$$

Optimal (type 3, 64 leaves, 6 steps):

$$-6 e^{2 i a} x - \frac{x^3}{3} - \frac{2 e^{2 i a} x^3}{e^{2 i a} - x^2} + 6 e^{3 i a} \operatorname{ArcTanh}\left[e^{-i a} x\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^2 \operatorname{Cot}[a + i \operatorname{Log}[x]]^2, x\right]$$

Problem 196: Unable to integrate problem.

$$\int x \operatorname{Cot}[a + i \operatorname{Log}[x]]^2 \, dx$$

Optimal (type 3, 55 leaves, 5 steps):

$$-\frac{x^2}{2} - \frac{2 e^{4 i a}}{e^{2 i a} - x^2} - 2 e^{2 i a} \operatorname{Log}\left[e^{2 i a} - x^2\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x \operatorname{Cot}[a + i \operatorname{Log}[x]]^2, x\right]$$

Problem 197: Unable to integrate problem.

$$\int \operatorname{Cot}[a + i \operatorname{Log}[x]]^2 \, dx$$

Optimal (type 3, 48 leaves, 6 steps):

$$-x-\frac{2 e^{2 i a} x}{e^{2 i a}-x^2}+2 e^{i a} \text{ArcTanh}\left[e^{-i a} x\right]$$

Result (type 8, 13 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Cot}[a+i \text{Log}[x]]^2, x\right]$$

Problem 199: Unable to integrate problem.

$$\int \frac{\text{Cot}[a+i \text{Log}[x]]^2}{x^2} \, dx$$

Optimal (type 3, 64 leaves, 5 steps):

$$\frac{e^{2 i a}}{x \left(e^{2 i a}-x^2\right)}-\frac{3 x}{e^{2 i a}-x^2}-2 e^{-i a} \text{ArcTanh}\left[e^{-i a} x\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Cot}[a+i \text{Log}[x]]^2}{x^2}, x\right]$$

Problem 200: Unable to integrate problem.

$$\int \frac{\text{Cot}[a+i \text{Log}[x]]^2}{x^3} \, dx$$

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

$$\frac{2 e^{-2 i a}}{1-\frac{e^{2 i a}}{x^2}}+\frac{1}{2 x^2}+2 e^{-2 i a} \text{Log}\left[1-\frac{e^{2 i a}}{x^2}\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Cot}[a+i \text{Log}[x]]^2}{x^3}, x\right]$$

Problem 201: Unable to integrate problem.

$$\int (e x)^m \text{Cot}[a+i \text{Log}[x]] \, dx$$

Optimal (type 5, 70 leaves, 4 steps):

$$\frac{i\,(e\,x)^{1+m}}{e\,(1+m)}-\frac{2\,i\,(e\,x)^{1+m}\,\text{Hypergeometric2F1}\left[1,\frac{1}{2}\,(-1-m),\frac{1-m}{2},\frac{e^{2\,i\,a}}{x^2}\right]}{e\,(1+m)}$$

Result (type 8, 17 leaves, 0 steps):

CannotIntegrate[(e x)^m Cot[a + i Log[x]], x]

Problem 202: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Cot}[a+i\,\text{Log}[x]]^2\,dx$$

Optimal (type 5, 77 leaves, 5 steps):

$$-\frac{x\,(e\,x)^m}{1+m}+\frac{2\,x\,(e\,x)^m}{1-\frac{e^{2\,i\,a}}{x^2}}-2\,x\,(e\,x)^m\,\text{Hypergeometric2F1}\left[1,\frac{1}{2}\,(-1-m),\frac{1-m}{2},\frac{e^{2\,i\,a}}{x^2}\right]$$

Result (type 8, 19 leaves, 0 steps):

CannotIntegrate[(e x)^m Cot[a + i Log[x]]^2, x]

Problem 203: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Cot}[a+i\,\text{Log}[x]]^3\,dx$$

Optimal (type 5, 169 leaves, 6 steps):

$$\frac{i\,(1-m)\,m\,x\,(e\,x)^m}{2\,(1+m)}-\frac{i\left(1+\frac{e^{2\,i\,a}}{x^2}\right)^2 x\,(e\,x)^m}{2\left(1-\frac{e^{2\,i\,a}}{x^2}\right)^2}-\frac{i\left(3+m-\frac{e^{2\,i\,a}\,(1-m)}{x^2}\right) x\,(e\,x)^m}{2\left(1-\frac{e^{2\,i\,a}}{x^2}\right)}+\frac{i\,(3+2\,m+m^2)\,x\,(e\,x)^m\,\text{Hypergeometric2F1}\left[1,\frac{1}{2}\,(-1-m),\frac{1-m}{2},\frac{e^{2\,i\,a}}{x^2}\right]}{1+m}$$

Result (type 8, 19 leaves, 0 steps):

CannotIntegrate[(e x)^m Cot[a + i Log[x]]^3, x]

Problem 204: Unable to integrate problem.

$$\int \text{Cot}[a+b\,\text{Log}[x]]^p\,dx$$

Optimal (type 6, 142 leaves, 4 steps):

$$x\,(1-e^{2\,i\,a}\,x^{2\,i\,b})^p\,(1+e^{2\,i\,a}\,x^{2\,i\,b})^{-p}\left(-\frac{i\,(1+e^{2\,i\,a}\,x^{2\,i\,b})}{1-e^{2\,i\,a}\,x^{2\,i\,b}}\right)^p\,\text{AppellF1}\left[-\frac{i}{2\,b},p,-p,1-\frac{i}{2\,b},e^{2\,i\,a}\,x^{2\,i\,b},-e^{2\,i\,a}\,x^{2\,i\,b}\right]$$

Result (type 8, 11 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Cot}[a+b\,\text{Log}[x]]^p,\,x\right]$$

Problem 205: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Cot}[a+b\,\text{Log}[x]]^p\,dx$$

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

$$\frac{1}{e\,(1+m)}(e\,x)^{1+m}\left(1-e^{2\,i\,a}\,x^{2\,i\,b}\right)^p\left(1+e^{2\,i\,a}\,x^{2\,i\,b}\right)^{-p}\left(-\frac{i\left(1+e^{2\,i\,a}\,x^{2\,i\,b}\right)}{1-e^{2\,i\,a}\,x^{2\,i\,b}}\right)^p\text{AppellF1}\left[-\frac{i\,(1+m)}{2\,b},\,p,\,-p,\,1-\frac{i\,(1+m)}{2\,b},\,e^{2\,i\,a}\,x^{2\,i\,b},\,-e^{2\,i\,a}\,x^{2\,i\,b}\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Cot}[a+b\,\text{Log}[x]]^p,\,x\right]$$

Problem 206: Unable to integrate problem.

$$\int \text{Cot}[a+\text{Log}[x]]^p\,dx$$

Optimal (type 6, 120 leaves, 4 steps):

$$\left(1-e^{2\,i\,a}\,x^{2\,i}\right)^p\left(1+e^{2\,i\,a}\,x^{2\,i}\right)^{-p}\left(-\frac{i\left(1+e^{2\,i\,a}\,x^{2\,i}\right)}{1-e^{2\,i\,a}\,x^{2\,i}}\right)^p x\,\text{AppellF1}\left[-\frac{i}{2},\,p,\,-p,\,1-\frac{i}{2},\,e^{2\,i\,a}\,x^{2\,i},\,-e^{2\,i\,a}\,x^{2\,i}\right]$$

Result (type 8, 9 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Cot}[a+\text{Log}[x]]^p,\,x\right]$$

Problem 207: Unable to integrate problem.

$$\int \text{Cot}[a+2\,\text{Log}[x]]^p\,dx$$

Optimal (type 6, 120 leaves, 4 steps):

$$\left(1-e^{2\,i\,a}\,x^{4\,i}\right)^p\left(1+e^{2\,i\,a}\,x^{4\,i}\right)^{-p}\left(-\frac{i\left(1+e^{2\,i\,a}\,x^{4\,i}\right)}{1-e^{2\,i\,a}\,x^{4\,i}}\right)^p x\,\text{AppellF1}\left[-\frac{i}{4},\,p,\,-p,\,1-\frac{i}{4},\,e^{2\,i\,a}\,x^{4\,i},\,-e^{2\,i\,a}\,x^{4\,i}\right]$$

Result (type 8, 11 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Cot}[a+2\,\text{Log}[x]]^p,\,x\right]$$

Problem 208: Unable to integrate problem.

$$\int \text{Cot}[a+3\,\text{Log}[x]]^p \, dx$$

Optimal (type 6, 120 leaves, 4 steps):

$$\left(1-e^{2\,i\,a}\,x^{6\,i}\right)^p \left(1+e^{2\,i\,a}\,x^{6\,i}\right)^{-p} \left(-\frac{i\left(1+e^{2\,i\,a}\,x^{6\,i}\right)}{1-e^{2\,i\,a}\,x^{6\,i}}\right)^p x\,\text{AppellF1}\left[-\frac{i}{6},\,p,\,-p,\,1-\frac{i}{6},\,e^{2\,i\,a}\,x^{6\,i},\,-e^{2\,i\,a}\,x^{6\,i}\right]$$

Result (type 8, 11 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Cot}[a+3\,\text{Log}[x]]^p,\,x\right]$$

Problem 209: Unable to integrate problem.

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

Optimal (type 5, 70 leaves, 4 steps):

$$\frac{i\,x^4}{4}-\frac{1}{2}\,i\,x^4\,\text{Hypergeometric2F1}\left[1,\,-\frac{2\,i}{b\,d\,n},\,1-\frac{2\,i}{b\,d\,n},\,e^{2\,i\,a\,d}\left(c\,x^n\right)^{2\,i\,b\,d}\right]$$

Result (type 8, 19 leaves, 0 steps):

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

Problem 210: Unable to integrate problem.

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

Optimal (type 5, 74 leaves, 4 steps):

$$\frac{i\,x^3}{3}-\frac{2}{3}\,i\,x^3\,\text{Hypergeometric2F1}\left[1,\,-\frac{3\,i}{2\,b\,d\,n},\,1-\frac{3\,i}{2\,b\,d\,n},\,e^{2\,i\,a\,d}\left(c\,x^n\right)^{2\,i\,b\,d}\right]$$

Result (type 8, 19 leaves, 0 steps):

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

Problem 211: Unable to integrate problem.

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

Optimal (type 5, 68 leaves, 4 steps):

$$\frac{i x^2}{2} - i x^2 \text{Hypergeometric2F1}\left[1, -\frac{i}{b d n}, 1 - \frac{i}{b d n}, e^{2 i a d} \left(c x^n\right)^{2 i b d}\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x \text{Cot}\left[d \left(a + b \text{Log}\left[c x^n\right]\right)\right], x\right]$$

Problem 212: Unable to integrate problem.

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

Optimal (type 5, 66 leaves, 4 steps):

$$i x - 2 i x \text{Hypergeometric2F1}\left[1, -\frac{i}{2 b d n}, 1 - \frac{i}{2 b d n}, e^{2 i a d} \left(c x^n\right)^{2 i b d}\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Cot}\left[d \left(a + b \text{Log}\left[c x^n\right]\right)\right], x\right]$$

Problem 214: Unable to integrate problem.

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

Optimal (type 5, 70 leaves, 4 steps):

$$-\frac{i}{x} + \frac{2 i \text{Hypergeometric2F1}\left[1, \frac{i}{2 b d n}, 1 + \frac{i}{2 b d n}, e^{2 i a d} \left(c x^n\right)^{2 i b d}\right]}{x}$$

Result (type 8, 19 leaves, 0 steps):

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

Problem 215: Unable to integrate problem.

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

Optimal (type 5, 68 leaves, 4 steps):

$$-\frac{i}{2x^2}+\frac{i\,\text{Hypergeometric2F1}\left[1,\frac{i}{b\,d\,n},1+\frac{i}{b\,d\,n},e^{2\,i\,a\,d}\left(c\,x^n\right)^{2\,i\,b\,d}\right]}{x^2}$$

Result (type 8, 19 leaves, 0 steps):

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

Problem 216: Unable to integrate problem.

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

Optimal (type 5, 158 leaves, 5 steps):

$$\frac{\left(4\,i-b\,d\,n\right)x^4}{4\,b\,d\,n}+\frac{i\,x^4\left(1+e^{2\,i\,a\,d}\left(c\,x^n\right)^{2\,i\,b\,d}\right)}{b\,d\,n\left(1-e^{2\,i\,a\,d}\left(c\,x^n\right)^{2\,i\,b\,d}\right)}-\frac{2\,i\,x^4\,\text{Hypergeometric2F1}\left[1,-\frac{2\,i}{b\,d\,n},1-\frac{2\,i}{b\,d\,n},e^{2\,i\,a\,d}\left(c\,x^n\right)^{2\,i\,b\,d}\right]}{b\,d\,n}$$

Result (type 8, 21 leaves, 0 steps):

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

Problem 217: Unable to integrate problem.

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

Optimal (type 5, 162 leaves, 5 steps):

$$\frac{\left(3\,i-b\,d\,n\right)x^3}{3\,b\,d\,n}+\frac{i\,x^3\left(1+e^{2\,i\,a\,d}\left(c\,x^n\right)^{2\,i\,b\,d}\right)}{b\,d\,n\left(1-e^{2\,i\,a\,d}\left(c\,x^n\right)^{2\,i\,b\,d}\right)}-\frac{2\,i\,x^3\,\text{Hypergeometric2F1}\left[1,-\frac{3\,i}{2\,b\,d\,n},1-\frac{3\,i}{2\,b\,d\,n},e^{2\,i\,a\,d}\left(c\,x^n\right)^{2\,i\,b\,d}\right]}{b\,d\,n}$$

Result (type 8, 21 leaves, 0 steps):

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

Problem 218: Unable to integrate problem.

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

Optimal (type 5, 158 leaves, 5 steps):

$$\frac{(2\,i-b\,d\,n)\,x^2}{2\,b\,d\,n}+\frac{i\,x^2\,\left(1+e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}{b\,d\,n\,\left(1-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}-\frac{2\,i\,x^2\,\text{Hypergeometric2F1}\left[1,-\frac{i}{b\,d\,n},1-\frac{i}{b\,d\,n},e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right]}{b\,d\,n}$$

Result (type 8, 19 leaves, 0 steps) :

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

Problem 219: Unable to integrate problem.

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

Optimal (type 5, 153 leaves, 5 steps) :

$$\frac{(i-b\,d\,n)\,x}{b\,d\,n}+\frac{i\,x\,\left(1+e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}{b\,d\,n\,\left(1-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}-\frac{2\,i\,x\,\text{Hypergeometric2F1}\left[1,-\frac{i}{2\,b\,d\,n},1-\frac{i}{2\,b\,d\,n},e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right]}{b\,d\,n}$$

Result (type 8, 17 leaves, 0 steps) :

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

Problem 221: Unable to integrate problem.

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

Optimal (type 5, 156 leaves, 5 steps) :

$$\frac{1+\frac{i}{b\,d\,n}}{x}+\frac{i\,\left(1+e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}{b\,d\,n\,x\,\left(1-e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right)}-\frac{2\,i\,\text{Hypergeometric2F1}\left[1,\frac{i}{2\,b\,d\,n},1+\frac{i}{2\,b\,d\,n},e^{2\,i\,a\,d}\,(c\,x^n)^{2\,i\,b\,d}\right]}{b\,d\,n\,x}$$

Result (type 8, 21 leaves, 0 steps) :

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

Problem 222: Unable to integrate problem.

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

Optimal (type 5, 155 leaves, 5 steps) :

$$\frac{1+\frac{2\,i}{b\,d\,n}}{2\,x^2}+\frac{i\,\left(1+e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right)}{b\,d\,n\,x^2\,\left(1-e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right)}-\frac{2\,i\,\text{Hypergeometric2F1}\left[1,\,\frac{i}{b\,d\,n},\,1+\frac{i}{b\,d\,n},\,e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right]}{b\,d\,n\,x^2}$$

Result (type 8, 21 leaves, 0 steps):

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

Problem 226: Unable to integrate problem.

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

Optimal (type 5, 100 leaves, 4 steps):

$$\frac{i\,(e\,x)^{1+m}}{e\,(1+m)}-\frac{2\,i\,(e\,x)^{1+m}\,\text{Hypergeometric2F1}\left[1,\,-\frac{i\,(1+m)}{2\,b\,d\,n},\,1-\frac{i\,(1+m)}{2\,b\,d\,n},\,e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right]}{e\,(1+m)}$$

Result (type 8, 21 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Cot}\left[d\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right],\,x\right]$$

Problem 227: Unable to integrate problem.

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

Optimal (type 5, 195 leaves, 5 steps):

$$\frac{\left(i\,(1+m)-b\,d\,n\right)\,(e\,x)^{1+m}}{b\,d\,e\,(1+m)\,n}+\frac{i\,(e\,x)^{1+m}\,\left(1+e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right)}{b\,d\,e\,n\,\left(1-e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right)}-\frac{2\,i\,(e\,x)^{1+m}\,\text{Hypergeometric2F1}\left[1,\,-\frac{i\,(1+m)}{2\,b\,d\,n},\,1-\frac{i\,(1+m)}{2\,b\,d\,n},\,e^{2\,i\,a\,d}\,\left(c\,x^n\right)^{2\,i\,b\,d}\right]}{b\,d\,e\,n}$$

Result (type 8, 23 leaves, 0 steps):

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

Problem 228: Unable to integrate problem.

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

Optimal (type 5, 350 leaves, 6 steps):

$$\frac{\left(i (1+m)-b d n\right) \left(1+m+2 i b d n\right) (e x)^{1+m}}{2 b^2 d^2 e (1+m) n^2}+\frac{(e x)^{1+m} \left(1+e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)^2}{2 b d e n \left(1-e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)^2}+\frac{i e^{-2 i a d} (e x)^{1+m} \left(\frac{e^{2 i a d} (1+m-2 i b d n)}{n}+\frac{e^{4 i a d} (1+m+2 i b d n) \left(c x^n\right)^{2 i b d}}{n}\right)}{2 b^2 d^2 e n \left(1-e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)}-$$

$$\frac{i \left(1+2 m+m^2-2 b^2 d^2 n^2\right) (e x)^{1+m} \text{Hypergeometric2F1}\left[1,-\frac{i (1+m)}{2 b d n},1-\frac{i (1+m)}{2 b d n},e^{2 i a d} \left(c x^n\right)^{2 i b d}\right]}{b^2 d^2 e (1+m) n^2}$$

Result (type 8, 23 leaves, 0 steps):

CannotIntegrate[(e x)^m Cot[d (a + b Log[c x^n])]^3, x]

Problem 229: Unable to integrate problem.

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

Optimal (type 6, 190 leaves, 5 steps):

$$x \left(1-e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)^p \left(1+e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)^{-p} \left(-\frac{i \left(1+e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)}{1-e^{2 i a d} \left(c x^n\right)^{2 i b d}}\right)^p$$

$$\text{AppellF1}\left[-\frac{i}{2 b d n},p,-p,1-\frac{i}{2 b d n},e^{2 i a d} \left(c x^n\right)^{2 i b d},-e^{2 i a d} \left(c x^n\right)^{2 i b d}\right]$$

Result (type 8, 17 leaves, 0 steps):

CannotIntegrate[Cot[d (a + b Log[c x^n])]^p, x]

Problem 230: Unable to integrate problem.

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

Optimal (type 6, 210 leaves, 5 steps):

$$\frac{1}{e (1+m)} (e x)^{1+m} \left(1-e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)^p \left(1+e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)^{-p}$$

$$\left(-\frac{i \left(1+e^{2 i a d} \left(c x^n\right)^{2 i b d}\right)}{1-e^{2 i a d} \left(c x^n\right)^{2 i b d}}\right)^p \text{AppellF1}\left[-\frac{i (1+m)}{2 b d n},p,-p,1-\frac{i (1+m)}{2 b d n},e^{2 i a d} \left(c x^n\right)^{2 i b d},-e^{2 i a d} \left(c x^n\right)^{2 i b d}\right]$$

Result (type 8, 23 leaves, 0 steps):

CannotIntegrate[(e x)^m Cot[d (a + b Log[c x^n])]^p, x]

Problem 259: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \left(-\left(1+b^2 n^2\right) \operatorname{Sec}\left[a+b \operatorname{Log}\left[c x^n\right]\right]+2 b^2 n^2 \operatorname{Sec}\left[a+b \operatorname{Log}\left[c x^n\right]\right]^3\right) dx$$

Optimal (type 3, 41 leaves, ? steps):

$$-x \operatorname{Sec}\left[a+b \operatorname{Log}\left[c x^n\right]\right]+b n x \operatorname{Sec}\left[a+b \operatorname{Log}\left[c x^n\right]\right] \operatorname{Tan}\left[a+b \operatorname{Log}\left[c x^n\right]\right]$$

Result (type 5, 175 leaves, 7 steps):

$$-2 e^{i a} (1-i b n) x \left(c x^n\right)^{i b} \text{Hypergeometric2F1}\left[1, \frac{1}{2}\left(1-\frac{i}{b n}\right), \frac{1}{2}\left(3-\frac{i}{b n}\right), -e^{2 i a} \left(c x^n\right)^{2 i b}\right]+\frac{16 b^2 e^{3 i a} n^2 x \left(c x^n\right)^{3 i b} \text{Hypergeometric2F1}\left[3, \frac{1}{2}\left(3-\frac{i}{b n}\right), \frac{1}{2}\left(5-\frac{i}{b n}\right), -e^{2 i a} \left(c x^n\right)^{2 i b}\right]}{1+3 i b n}$$

Problem 260: Result unnecessarily involves higher level functions.

$$\int x^m \operatorname{Sec}\left[a+2 \operatorname{Log}\left[c x^{\frac{1}{2} \sqrt{-(1+m)^2}}\right]\right]^3 dx$$

Optimal (type 3, 110 leaves, ? steps):

$$\frac{x^{1+m} \operatorname{Sec}\left[a+2 \operatorname{Log}\left[c x^{\frac{1}{2} \sqrt{-(1+m)^2}}\right]\right]}{2 (1+m)}+\frac{x^{1+m} \operatorname{Sec}\left[a+2 \operatorname{Log}\left[c x^{\frac{1}{2} \sqrt{-(1+m)^2}}\right]\right] \operatorname{Tan}\left[a+2 \operatorname{Log}\left[c x^{\frac{1}{2} \sqrt{-(1+m)^2}}\right]\right]}{2 \sqrt{-(1+m)^2}}$$

Result (type 5, 146 leaves, 3 steps):

$$\left(8 e^{3 i a} x^{1+m} \left(c x^{\frac{1}{2} \sqrt{-(1+m)^2}}\right)^{6 i} \text{Hypergeometric2F1}\left[3, \frac{1}{2}\left(3-\frac{i (1+m)}{\sqrt{-(1+m)^2}}\right), \frac{1}{2}\left(5-\frac{i (1+m)}{\sqrt{-(1+m)^2}}\right), -e^{2 i a} \left(c x^{\frac{1}{2} \sqrt{-(1+m)^2}}\right)^{4 i}\right]\right) \Big/ \left(1-i \left(i m-3 \sqrt{-(1+m)^2}\right)\right)$$

Problem 301: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \left(-\left(1+b^2 n^2\right) \operatorname{Csc}\left[a+b \operatorname{Log}\left[c x^n\right]\right]+2 b^2 n^2 \operatorname{Csc}\left[a+b \operatorname{Log}\left[c x^n\right]\right]^3\right) dx$$

Optimal (type 3, 42 leaves, ? steps):

$$-x\,\mathrm{Csc}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]-b\,n\,x\,\mathrm{Cot}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]\,\mathrm{Csc}\left[a+b\,\mathrm{Log}\left[c\,x^n\right]\right]$$

Result (type 5, 172 leaves, 7 steps):

$$2\,e^{i\,a}\,(i+b\,n)\,x\,(c\,x^n)^{i\,b}\,\mathrm{Hypergeometric2F1}\left[1,\frac{1}{2}\left(1-\frac{i}{b\,n}\right),\frac{1}{2}\left(3-\frac{i}{b\,n}\right),e^{2\,i\,a}\,(c\,x^n)^{2\,i\,b}\right]-\frac{16\,b^2\,e^{3\,i\,a}\,n^2\,x\,(c\,x^n)^{3\,i\,b}\,\mathrm{Hypergeometric2F1}\left[3,\frac{1}{2}\left(3-\frac{i}{b\,n}\right),\frac{1}{2}\left(5-\frac{i}{b\,n}\right),e^{2\,i\,a}\,(c\,x^n)^{2\,i\,b}\right]}{i-3\,b\,n}$$

Problem 302: Result unnecessarily involves higher level functions.

$$\int x^m\,\mathrm{Csc}\left[a+2\,\mathrm{Log}\left[c\,x^{\frac{1}{2}\sqrt{-(1+m)^2}}\right]\right]^3\,dx$$

Optimal (type 3, 110 leaves, ? steps):

$$\frac{x^{1+m}\,\mathrm{Csc}\left[a+2\,\mathrm{Log}\left[c\,x^{\frac{1}{2}\sqrt{-(1+m)^2}}\right]\right]}{2\,(1+m)}-\frac{x^{1+m}\,\mathrm{Cot}\left[a+2\,\mathrm{Log}\left[c\,x^{\frac{1}{2}\sqrt{-(1+m)^2}}\right]\right]\,\mathrm{Csc}\left[a+2\,\mathrm{Log}\left[c\,x^{\frac{1}{2}\sqrt{-(1+m)^2}}\right]\right]}{2\sqrt{-(1+m)^2}}$$

Result (type 5, 142 leaves, 3 steps):

$$-\frac{1}{i+i\,m-3\sqrt{-(1+m)^2}}8\,e^{3\,i\,a}\,x^{1+m}\left(c\,x^{\frac{1}{2}\sqrt{-(1+m)^2}}\right)^{6\,i}\,\mathrm{Hypergeometric2F1}\left[3,\frac{1}{2}\left(3-\frac{i\,(1+m)}{\sqrt{-(1+m)^2}}\right),\frac{1}{2}\left(5-\frac{i\,(1+m)}{\sqrt{-(1+m)^2}}\right),e^{2\,i\,a}\left(c\,x^{\frac{1}{2}\sqrt{-(1+m)^2}}\right)^{4\,i}\right]$$

Test results for the 142 problems in "4.7.6 f^(a+b x+c x^2) trig(d+e x+f x^2)^n.m"

Problem 28: Unable to integrate problem.

$$\int F^{c\,(a+b\,x)}\,(f\,x)^m\,\mathrm{Sin}[d+e\,x]\,dx$$

Optimal (type 4, 139 leaves, ? steps):

$$-\frac{e^{-i\,d}\,F^{a\,c}\,(f\,x)^m\,\mathrm{Gamma}\left[1+m,x\,(i\,e-b\,c\,\mathrm{Log}[F])\right]\,(x\,(i\,e-b\,c\,\mathrm{Log}[F]))^{-m}}{2\,(e+i\,b\,c\,\mathrm{Log}[F])}-\frac{e^{i\,d}\,F^{a\,c}\,(f\,x)^m\,\mathrm{Gamma}\left[1+m,-x\,(i\,e+b\,c\,\mathrm{Log}[F])\right]\,(-x\,(i\,e+b\,c\,\mathrm{Log}[F]))^{-m}}{2\,(e-i\,b\,c\,\mathrm{Log}[F])}$$

Result (type 8, 24 leaves, 1 step):

$\text{CannotIntegrate}\left[F^{a\,c+b\,c\,x}\,(f\,x)^m\,\text{Sin}[d+e\,x],\,x\right]$

Problem 32: Unable to integrate problem.

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

Optimal (type 3, 23 leaves, ? steps):

$$f\,F^{c\,(a+b\,x)}\,x\,(f\,x)^m\,\text{Sin}[d+e\,x]$$

Result (type 8, 89 leaves, 6 steps):

$$e\,\text{CannotIntegrate}\left[F^{a\,c+b\,c\,x}\,(f\,x)^{1+m}\,\text{Cos}[d+e\,x],\,x\right]+f\,(1+m)\,\text{CannotIntegrate}\left[F^{a\,c+b\,c\,x}\,(f\,x)^m\,\text{Sin}[d+e\,x],\,x\right]+b\,c\,\text{CannotIntegrate}\left[F^{a\,c+b\,c\,x}\,(f\,x)^{1+m}\,\text{Sin}[d+e\,x],\,x\right]\,\text{Log}[F]$$

Test results for the 950 problems in "4.7.7 Trig functions.m"

Problem 759: Result valid but suboptimal antiderivative.

$$\int \left(\text{Cos}[x]^{12}\,\text{Sin}[x]^{10}-\text{Cos}[x]^{10}\,\text{Sin}[x]^{12}\right)\,dx$$

Optimal (type 3, 12 leaves, ? steps):

$$\frac{1}{11}\,\text{Cos}[x]^{11}\,\text{Sin}[x]^{11}$$

Result (type 3, 129 leaves, 25 steps):

$$\frac{3\,\text{Cos}[x]^{11}\,\text{Sin}[x]}{5632}-\frac{3\,\text{Cos}[x]^{13}\,\text{Sin}[x]}{5632}+\frac{1}{512}\,\text{Cos}[x]^{11}\,\text{Sin}[x]^3-\frac{7\,\text{Cos}[x]^{13}\,\text{Sin}[x]^3}{2816}+\frac{7\,\text{Cos}[x]^{11}\,\text{Sin}[x]^5}{1280}-\frac{7}{880}\,\text{Cos}[x]^{13}\,\text{Sin}[x]^5+\frac{1}{80}\,\text{Cos}[x]^{11}\,\text{Sin}[x]^7-\frac{9}{440}\,\text{Cos}[x]^{13}\,\text{Sin}[x]^7+\frac{1}{40}\,\text{Cos}[x]^{11}\,\text{Sin}[x]^9-\frac{1}{22}\,\text{Cos}[x]^{13}\,\text{Sin}[x]^9+\frac{1}{22}\,\text{Cos}[x]^{11}\,\text{Sin}[x]^{11}$$

Problem 796: Unable to integrate problem.

$$\int e^{\text{Sin}[x]}\,\text{Sec}[x]^2\,\left(x\,\text{Cos}[x]^3-\text{Sin}[x]\right)\,dx$$

Optimal (type 3, 13 leaves, ? steps):

$$e^{\text{Sin}[x]}\,(-1+x\,\text{Cos}[x])\,\text{Sec}[x]$$

Result (type 8, 24 leaves, 2 steps):

$$\text{CannotIntegrate}\left[e^{\text{Sin}[x]}\, x\, \text{Cos}[x], x\right] - \text{CannotIntegrate}\left[e^{\text{Sin}[x]}\, \text{Sec}[x]\, \text{Tan}[x], x\right]$$

Problem 858: Result valid but suboptimal antiderivative.

$$\int \frac{1}{\text{Cos}[x]^{3/2}\,\sqrt{3\,\text{Cos}[x] + \text{Sin}[x]}}\, dx$$

Optimal (type 3, 19 leaves, ? steps):

$$\frac{2\,\sqrt{3\,\text{Cos}[x] + \text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}$$

Result (type 3, 88 leaves, 5 steps):

$$\frac{2\,\text{Cos}\left[\frac{x}{2}\right]^2\left(3 + 2\,\text{Tan}\left[\frac{x}{2}\right] - 3\,\text{Tan}\left[\frac{x}{2}\right]^2\right)}{\sqrt{\text{Cos}\left[\frac{x}{2}\right]^2\left(3 + 2\,\text{Tan}\left[\frac{x}{2}\right] - 3\,\text{Tan}\left[\frac{x}{2}\right]^2\right)}\,\sqrt{\text{Cos}\left[\frac{x}{2}\right]^2\left(1 - \text{Tan}\left[\frac{x}{2}\right]^2\right)}}$$

Problem 860: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Cos}[x] + \text{Sin}[x]}{\sqrt{1 + \text{Sin}[2\,x]}}\, dx$$

Optimal (type 3, 19 leaves, ? steps):

$$\frac{x\,\sqrt{1 + \text{Sin}[2\,x]}}{\text{Cos}[x] + \text{Sin}[x]}$$

Result (type 3, 72 leaves, 17 steps):

$$\frac{2\,\text{ArcTan}\left[\text{Tan}\left[\frac{x}{2}\right]\right]\,\text{Cos}\left[\frac{x}{2}\right]^2\left(1 + 2\,\text{Tan}\left[\frac{x}{2}\right] - \text{Tan}\left[\frac{x}{2}\right]^2\right)}{\sqrt{\text{Cos}\left[\frac{x}{2}\right]^4\left(1 + 2\,\text{Tan}\left[\frac{x}{2}\right] - \text{Tan}\left[\frac{x}{2}\right]^2\right)^2}}$$

Problem 912: Result valid but suboptimal antiderivative.

$$\int \frac{\text{Cos}[x] + \text{Sin}[x]}{\sqrt{\text{Cos}[x]}\,\sqrt{\text{Sin}[x]}}\, dx$$

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

$$-\sqrt{2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}\right]+\sqrt{2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}\right]$$

Result (type 3, 243 leaves, 22 steps):

$$\frac{\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Cos}[x]}}{\sqrt{\text{Sin}[x]}}\right]}{\sqrt{2}}-\frac{\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Cos}[x]}}{\sqrt{\text{Sin}[x]}}\right]}{\sqrt{2}}-\frac{\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}\right]}{\sqrt{2}}+\frac{\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}\right]}{\sqrt{2}}-$$

$$\frac{\text{Log}\left[1+\text{Cot}[x]-\frac{\sqrt{2}\,\sqrt{\text{Cos}[x]}}{\sqrt{\text{Sin}[x]}}\right]}{2\sqrt{2}}+\frac{\text{Log}\left[1+\text{Cot}[x]+\frac{\sqrt{2}\,\sqrt{\text{Cos}[x]}}{\sqrt{\text{Sin}[x]}}\right]}{2\sqrt{2}}+\frac{\text{Log}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}+\text{Tan}[x]\right]}{2\sqrt{2}}-\frac{\text{Log}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}+\text{Tan}[x]\right]}{2\sqrt{2}}$$

Problem 914: Unable to integrate problem.

$$\int\left(10\,x^9\,\text{Cos}\left[x^5\,\text{Log}[x]\right]-x^{10}\,\left(x^4+5\,x^4\,\text{Log}[x]\right)\,\text{Sin}\left[x^5\,\text{Log}[x]\right]\right)\,dx$$

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

$$x^{10}\,\text{Cos}\left[x^5\,\text{Log}[x]\right]$$

Result (type 8, 48 leaves, 4 steps):

$$10\,\text{CannotIntegrate}\left[x^9\,\text{Cos}\left[x^5\,\text{Log}[x]\right],\,x\right]-\text{CannotIntegrate}\left[x^{14}\,\text{Sin}\left[x^5\,\text{Log}[x]\right],\,x\right]-5\,\text{CannotIntegrate}\left[x^{14}\,\text{Log}[x]\,\text{Sin}\left[x^5\,\text{Log}[x]\right],\,x\right]$$

Problem 931: Unable to integrate problem.

$$\int\left(\frac{x^4}{b\,\sqrt{x^3+3\,\text{Sin}[a+b\,x]}}+\frac{x^2\,\text{Cos}[a+b\,x]}{\sqrt{x^3+3\,\text{Sin}[a+b\,x]}}+\frac{4\,x\,\sqrt{x^3+3\,\text{Sin}[a+b\,x]}}{3\,b}\right)\,dx$$

Optimal (type 3, 26 leaves, ? steps):

$$\frac{2\,x^2\,\sqrt{x^3+3\,\text{Sin}[a+b\,x]}}{3\,b}$$

Result (type 8, 82 leaves, 1 step):

$$\frac{\text{CannotIntegrate}\left[\frac{x^4}{\sqrt{x^3+3\,\text{Sin}[a+b\,x]}},\,x\right]}{b}+\text{CannotIntegrate}\left[\frac{x^2\,\text{Cos}[a+b\,x]}{\sqrt{x^3+3\,\text{Sin}[a+b\,x]}},\,x\right]+\frac{4\,\text{CannotIntegrate}\left[x\,\sqrt{x^3+3\,\text{Sin}[a+b\,x]}\,,\,x\right]}{3\,b}$$

Problem 933: Unable to integrate problem.

$$\int \frac{\text{Cos}[x] + \text{Sin}[x]}{e^{-x} + \text{Sin}[x]} \, dx$$

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

$$\text{Log}\left[1 + e^x \,\text{Sin}[x]\right]$$

Result (type 8, 36 leaves, 5 steps) :

$$x - \text{CannotIntegrate}\left[\frac{1}{1 + e^x \,\text{Sin}[x]}, x\right] - \text{CannotIntegrate}\left[\frac{\text{Cot}[x]}{1 + e^x \,\text{Sin}[x]}, x\right] + \text{Log}[\text{Sin}[x]]$$