Rubi 4.16.0.4 Integration Test Results

on the problems in the test-suite directory "4 Trig functions"

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

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

Test results for the 72 problems in "4.1.1.1 (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 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):

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

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

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

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

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

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 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 1479: Unable to integrate problem.

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

Optimal (type 4, 312 leaves, ? steps):

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

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

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

Problem 1480: Unable to integrate problem.

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

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

$$\frac{5\,a\,\text{Sec}[e+f x]\,(b+a\,\text{Sin}[e+f x])\,\sqrt{a+b\,\text{Sin}[e+f x]}}{6\,f\,\sqrt{d\,\text{Sin}[e+f x]}}+\frac{\text{Sec}[e+f x]^3\,\sqrt{d\,\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])^{5/2}}{3\,d\,f}-\frac{5\,a\,(a+b)^{3/2}\,\sqrt{-\frac{a\,(-1+\text{Csc}[e+f x])}{a+b}}\,\sqrt{\frac{a\,(1+\text{Csc}[e+f x])}{a-b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{a+b}\,\sqrt{d\,\text{Sin}[e+f x]}}\right],-\frac{a+b}{a-b}\right]\,\text{Tan}[e+f x]}{6\,\sqrt{d}\,f}-\left(5\,a\,b\,(a+b)\,\sqrt{-\frac{a\,(-1+\text{Csc}[e+f x])}{a+b}}\,\sqrt{\frac{b+a\,\text{Csc}[e+f x]}{-a+b}}\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{-\frac{b+a\,\text{Csc}[e+f x]}{a-b}}\right],\frac{-a+b}{a+b}\right]\,(1+\text{Sin}[e+f x])\,\text{Tan}[e+f x]\right)\Big/\left(6\,f\,\sqrt{\frac{a\,(1+\text{Csc}[e+f x])}{a-b}}\,\sqrt{d\,\text{Sin}[e+f x]}\,\sqrt{a+b\,\text{Sin}[e+f x]}\right)$$

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

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

Problem 1515: Unable to integrate problem.

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

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

$$-\frac{3\,a\,b\,(-2\,a^2+b^2)\,\text{Cos}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}}{5\,f\sqrt{d\,\text{Sin}[e+f x]}}+\frac{\text{Sec}[e+f x]^5\sqrt{d\,\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])^{9/2}}{5\,d\,f}-\frac{1}{20\,d\,f}3\,a\,\text{Sec}[e+f x]^3\sqrt{d\,\text{Sin}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}$$
$$\left(-a\,(7\,a^2+b^2)+2\,b\,(-7\,a^2+b^2)\,\text{Sin}[e+f x]+5\,a\,(a^2-b^2)\,\text{Sin}[e+f x]^2+(8\,a^2\,b-4\,b^3)\,\text{Sin}[e+f x]^3\right)-\frac{1}{20\sqrt{d}\,f}3\,a\,(a+b)^{3/2}\,(5\,a^2+3\,a\,b-4\,b^2)$$
$$\sqrt{-\frac{a\,(-1+\text{Csc}[e+f x])}{a+b}}\sqrt{\frac{a\,(1+\text{Csc}[e+f x])}{a-b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{d}\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{a+b}\sqrt{d\,\text{Sin}[e+f x]}}\right],-\frac{a+b}{a-b}\right]\text{Tan}[e+f x]-$$
$$\frac{1}{5\,d\,f\sqrt{a+b\,\text{Sin}[e+f x]}}3\,b\,(2\,a^4-3\,a^2\,b^2+b^4)\sqrt{-\frac{a\,(-1+\text{Csc}[e+f x])}{a+b}}\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{-\frac{b+a\,\text{Csc}[e+f x]}{a-b}}\right],1-\frac{2\,a}{a+b}\right]$$
$$\sqrt{d\,\text{Sin}[e+f x]}\sqrt{-\frac{a\,\text{Csc}[e+f x]^2\,(1+\text{Sin}[e+f x])\,(a+b\,\text{Sin}[e+f x])}{(a-b)^2}}\,\text{Tan}[e+f x]$$

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

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

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 391: Unable to integrate problem.

$$\int \frac{\operatorname{Sec}[c+d x]^2}{a+b \operatorname{Sin}[c+d x]^3} \, dx$$

Optimal (type 3, 299 leaves, ? steps):

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

$$\frac{2 (-1)^{1/3} b^{2/3} \operatorname{ArcTan}\left[\frac{(-1)^{2/3} b^{1/3}+a^{1/3} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}}\right]}{3 a^{2/3} \left(a^{2/3}+(-1)^{1/3} b^{2/3}\right)^{3/2} d}+\frac{\operatorname{Sec}[c+d x] \left(b-a \operatorname{Sin}[c+d x]\right)}{\left(-a^2+b^2\right) d}$$

Result (type 8, 25 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{\operatorname{Sec}[c+d x]^2}{a+b \operatorname{Sin}[c+d x]^3}, x\right]$$

Problem 392: Unable to integrate problem.

$$\int \frac{\operatorname{Sec}[c+d x]^4}{a+b \operatorname{Sin}[c+d x]^3} \, dx$$

Optimal (type 3, 1093 leaves, ? steps):

$$-\frac{2\,(-1)^{2/3}\,a^{2/3}\,b^{8/3}\,\text{ArcTan}\left[\frac{(-1)^{1/3}\,b^{1/3}-a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,\left(a^2-b^2\right)^2 d}-\frac{2\,b^2\,\left(2\,a^2+b^2\right)\,\text{ArcTan}\left[\frac{(-1)^{1/3}\,b^{1/3}-a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,a^{2/3}\,\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,\left(a^2-b^2\right)^2 d}+\frac{2\,a^{2/3}\,b^{8/3}\,\text{ArcTan}\left[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{\sqrt{a^{2/3}-b^{2/3}}\,\left(a^2-b^2\right)^2 d}+$$

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

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

$$\frac{2\,b^{4/3}\,\left(a^2+2\,b^2\right)\,\text{ArcTanh}\left[\frac{b^{1/3}+(-1)^{2/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}\,\left(a^2-b^2\right)^2 d}+\frac{\text{Cos}[c+d\,x]}{12\,(a+b)\,d\,(1-\text{Sin}[c+d\,x])^2}+\frac{\text{Cos}[c+d\,x]}{12\,(a+b)\,d\,(1-\text{Sin}[c+d\,x])}+$$

$$\frac{(a+4\,b)\,\text{Cos}[c+d\,x]}{4\,(a+b)^2\,d\,(1-\text{Sin}[c+d\,x])}-\frac{\text{Cos}[c+d\,x]}{12\,(a-b)\,d\,(1+\text{Sin}[c+d\,x])^2}-\frac{(a-4\,b)\,\text{Cos}[c+d\,x]}{4\,(a-b)^2\,d\,(1+\text{Sin}[c+d\,x])}-\frac{\text{Cos}[c+d\,x]}{12\,(a-b)\,d\,(1+\text{Sin}[c+d\,x])}$$

Result (type 8, 25 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{\text{Sec}[c+d\,x]^4}{a+b\,\text{Sin}[c+d\,x]^3},\,x\right]$$

Problem 593: Unable to integrate problem.

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

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

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

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

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

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):

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

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 294 problems in "4.2.0 (a cos)^m (b trg)^n.m"

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

Test results for the 62 problems in "4.2.1.1 (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 88 problems in "4.2.1.2 (g sin)^p (a+b cos)^m.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 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 387 problems in "4.3.0 (a trg)^m (b tan)^n.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.

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

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

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

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

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

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 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 52 problems in "4.4.0 (a trg)^m (b cot)^n.m"

Test results for the 61 problems in "4.4.10 (c+d x)^m (a+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 299 problems in "4.5.0 (a sec)^m (b trg)^n.m"

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 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):

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

Problem 276: Unable to integrate problem.

$$\int \text{Csc}[c+d\,x]^4\,\left(a+b\,\text{Sec}[c+d\,x]\right)^n\,dx$$

Optimal (type 6, 424 leaves, ? steps):

$$-\frac{1}{2\sqrt{2}\,d}\,3\,\text{AppellF1}\left[-\frac{1}{2},\frac{5}{2},-n,\frac{1}{2},\frac{1}{2}\left(1-\text{Sec}[c+d\,x]\right),\frac{b\left(1-\text{Sec}[c+d\,x]\right)}{a+b}\right]\text{Cot}[c+d\,x]\sqrt{1+\text{Sec}[c+d\,x]}\left(a+b\,\text{Sec}[c+d\,x]\right)^n\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{-n}-$$
$$\frac{1}{6\sqrt{2}\,d}\text{AppellF1}\left[-\frac{3}{2},\frac{5}{2},-n,-\frac{1}{2},\frac{1}{2}\left(1-\text{Sec}[c+d\,x]\right),\frac{b\left(1-\text{Sec}[c+d\,x]\right)}{a+b}\right]\text{Cot}[c+d\,x]^3$$
$$\left(1+\text{Sec}[c+d\,x]\right)^{3/2}\left(a+b\,\text{Sec}[c+d\,x]\right)^n\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{-n}+\frac{1}{\sqrt{2}\,d\sqrt{1+\text{Sec}[c+d\,x]}}$$
$$\text{AppellF1}\left[\frac{1}{2},\frac{3}{2},-n,\frac{3}{2},\frac{1}{2}\left(1-\text{Sec}[c+d\,x]\right),\frac{b\left(1-\text{Sec}[c+d\,x]\right)}{a+b}\right]\left(a+b\,\text{Sec}[c+d\,x]\right)^n\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{-n}\text{Tan}[c+d\,x]+$$
$$\frac{1}{2\sqrt{2}\,d\sqrt{1+\text{Sec}[c+d\,x]}}$$
$$\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-n,\frac{3}{2},\frac{1}{2}\left(1-\text{Sec}[c+d\,x]\right),\frac{b\left(1-\text{Sec}[c+d\,x]\right)}{a+b}\right]\left(a+b\,\text{Sec}[c+d\,x]\right)^n\left(\frac{a+b\,\text{Sec}[c+d\,x]}{a+b}\right)^{-n}\text{Tan}[c+d\,x]$$

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

$$\text{Unintegrable}\left[\text{Csc}[c+d\,x]^4\left(a+b\,\text{Sec}[c+d\,x]\right)^n,x\right]$$

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.

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

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

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

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

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

Problem 347: Unable to integrate problem.

$$\int \frac{(d\,\text{Tan}[e+f x])^n}{a+b\,\text{Sec}[e+f x]}\,dx$$

Optimal (type 6, 266 leaves, ? steps):

$$\frac{1}{a f (1-n)} d\,\text{AppellF1}\left[1-n,\frac{1-n}{2},\frac{1-n}{2},2-n,\frac{a+b}{a+b\,\text{Sec}[e+f x]},\frac{a-b}{a+b\,\text{Sec}[e+f x]}\right]\left(-\frac{b\,(1-\text{Sec}[e+f x])}{a+b\,\text{Sec}[e+f x]}\right)^{\frac{1-n}{2}}\left(\frac{b\,(1+\text{Sec}[e+f x])}{a+b\,\text{Sec}[e+f x]}\right)^{\frac{1-n}{2}}(d\,\text{Tan}[e+f x])^{-1+n}\left(-\text{Tan}[e+f x]^2\right)^{\frac{1-n}{2}+\frac{1}{2}(-1+n)}-\frac{d\,\text{Hypergeometric2F1}\left[1,\frac{1+n}{2},\frac{3+n}{2},-\text{Tan}[e+f x]^2\right](d\,\text{Tan}[e+f x])^{-1+n}\left(-\text{Tan}[e+f x]^2\right)^{\frac{1-n}{2}+\frac{1+n}{2}}}{a f (1+n)}$$

Result (type 8, 25 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(d\,\text{Tan}[e+f x])^n}{a+b\,\text{Sec}[e+f x]},x\right]$$

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

Problem 217: Unable to integrate problem.

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

Optimal (type 4, 652 leaves, ? steps):

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

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

$$\frac{1}{a b f \sqrt{\frac{(a+b) (c+d \operatorname{Sec}[e+f x])}{(c+d) (a+b \operatorname{Sec}[e+f x])}}} 2 (b c-a d) \operatorname{Cot}[e+f x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\sqrt{\frac{(a+b) (c+d \operatorname{Sec}[e+f x])}{(c+d) (a+b \operatorname{Sec}[e+f x])}}\right], \frac{(a-b) (c+d)}{(a+b) (c-d)}\right] \sqrt{\frac{(b c-a d) (-1+\operatorname{Sec}[e+f x])}{(c+d) (a+b \operatorname{Sec}[e+f x])}} \sqrt{\frac{(b c-a d) (1+\operatorname{Sec}[e+f x])}{(c-d) (a+b \operatorname{Sec}[e+f x])}} \sqrt{a+b \operatorname{Sec}[e+f x]} \sqrt{c+d \operatorname{Sec}[e+f x]}$$

Result (type 8, 31 leaves, 0 steps):

$$\operatorname{Unintegrable}\left[\frac{(c+d \operatorname{Sec}[e+f x])^{3/2}}{\sqrt{a+b \operatorname{Sec}[e+f x]}}, x\right]$$

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 132: Unable to integrate problem.

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

Optimal (type 6, 123 leaves, ? steps):

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

Result (type 8, 27 leaves, 0 steps):

$$\mathrm{Unintegrable}\left[\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^p \left(d\,\mathrm{Sin}[e+f\,x]\right)^m,\ x\right]$$

Problem 228: Result valid but suboptimal antiderivative.

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

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):

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

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

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

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

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

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

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):

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

Problem 230: Result valid but suboptimal antiderivative.

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

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

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

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

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

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

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

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

Problem 231: Result valid but suboptimal antiderivative.

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

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

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

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

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

Problem 232: Result valid but suboptimal antiderivative.

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

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

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

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

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

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

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

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

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

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

Problem 233: Result valid but suboptimal antiderivative.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Problem 241: Result valid but suboptimal antiderivative.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Problem 242: Result valid but suboptimal antiderivative.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Problem 243: Result valid but suboptimal antiderivative.

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

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

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

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

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

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

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

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

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

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

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

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

Problem 244: Result valid but suboptimal antiderivative.

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

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

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

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

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

Problem 245: Result valid but suboptimal antiderivative.

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

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):

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

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

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

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

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

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

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

$$\frac{a\,\text{Cos}[e+f x]^4\sqrt{a+b\,\text{Sec}[e+f x]^2}\;\text{Sin}[e+f x]\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}{5 f\sqrt{b+a\,\text{Cos}[e+f x]^2}}+$$

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

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

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

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

Problem 257: Result valid but suboptimal antiderivative.

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

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):

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

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

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

Problem 270: Result valid but suboptimal antiderivative.

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

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

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

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

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

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

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

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

Problem 271: Result valid but suboptimal antiderivative.

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

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

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

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

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

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):

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

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

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

Problem 275: Result valid but suboptimal antiderivative.

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

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

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

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

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

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

Result (type 4, 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):

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

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

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

Problem 284: Result valid but suboptimal antiderivative.

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

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

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

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

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

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):

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

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

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

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

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

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

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

Problem 298: Unable to integrate problem.

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

Optimal (type 6, 111 leaves, ? steps):

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

$$\text{Cot}[e+f x]\,(d\,\text{Sec}[e+f x])^m\left(a+b\,\text{Sec}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Sec}[e+f x]^2}{a}\right)^{-p}\sqrt{-\text{Tan}[e+f x]^2}$$

Result (type 8, 27 leaves, 0 steps):

$$\text{Unintegrable}\left[(d\,\text{Sec}[e+f x])^m\left(a+b\,\text{Sec}[e+f x]^2\right)^p,x\right]$$

Problem 299: Result valid but suboptimal antiderivative.

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

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):

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

Problem 300: Result valid but suboptimal antiderivative.

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

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

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

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 301: Result valid but suboptimal antiderivative.

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

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

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

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

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

Problem 302: Result valid but suboptimal antiderivative.

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

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

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

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 70 problems in "4.6.0 (a csc)^m (b trg)^n.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 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 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.

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

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

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

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.

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

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

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

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

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

Problem 123: Result valid but suboptimal antiderivative.

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

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

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

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

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

Problem 131: Result valid but suboptimal antiderivative.

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

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

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

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.

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

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

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

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):

$$-\frac{a\left(2a^2-3b^2\right)\text{ArcTanh}\left[\frac{b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2+b^2}}\right]}{\left(a^2+b^2\right)^{7/2}d}-\frac{8b^3\left(a\left(a^2+2b^2\right)+b\left(3a^2+4b^2\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{3a^5\left(a^2+b^2\right)d\left(a+2b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^3}+$$

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

$$\frac{b\left(6a^6+9a^4b^2+12a^2b^4+4b^6+a\,b\left(9a^4+6a^2b^2+2b^4\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{a^4\left(a^2+b^2\right)^3d\left(a+2b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}$$

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.

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

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

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

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

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

Problem 136: Unable to integrate problem.

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

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

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

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

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

Problem 137: Unable to integrate problem.

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

Optimal (type 3, 33 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):

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

Problem 138: Unable to integrate problem.

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

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):

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

Problem 140: Unable to integrate problem.

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

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):

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

Problem 141: Unable to integrate problem.

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

Optimal (type 3, 35 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):

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

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.

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

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

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

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

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

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):

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

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):

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

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):

$$\frac{e^{2ia}}{x\left(e^{2ia}+x^2\right)}+\frac{3x}{e^{2ia}+x^2}+2e^{-ia}\text{ArcTan}\left[e^{-ia}x\right]$$

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

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

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):

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

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):

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

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):

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

Problem 152: Unable to integrate problem.

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

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

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

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

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

Problem 153: Unable to integrate problem.

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

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

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

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

CannotIntegrate[Tan[a + b Log[x]]^p, x]

Problem 154: Unable to integrate problem.

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

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

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

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

CannotIntegrate[(e x)^m Tan[a + b Log[x]]^p, x]

Problem 155: Unable to integrate problem.

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

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

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

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

CannotIntegrate[Tan[a + Log[x]]^p, x]

Problem 156: Unable to integrate problem.

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

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

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

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

CannotIntegrate[Tan[a + 2 Log[x]]^p, x]

Problem 157: Unable to integrate problem.

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

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

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

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

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

Problem 158: Unable to integrate problem.

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

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

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

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

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

Problem 159: Unable to integrate problem.

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

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

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

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

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

Problem 160: Unable to integrate problem.

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

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

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

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

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

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):

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

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

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

Problem 163: Unable to integrate problem.

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

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

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

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

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

Problem 164: Unable to integrate problem.

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

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

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

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

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

Problem 165: Unable to integrate problem.

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

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):

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

Problem 166: Unable to integrate problem.

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

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):

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

Problem 167: Unable to integrate problem.

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

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):

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

Problem 168: Unable to integrate problem.

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

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

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

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

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

Problem 170: Unable to integrate problem.

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

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

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

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

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

Problem 171: Unable to integrate problem.

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

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

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

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

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

Problem 175: Unable to integrate problem.

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

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):

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

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

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

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):

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

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

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

Problem 178: Unable to integrate problem.

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

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

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

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

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

Problem 179: Unable to integrate problem.

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

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

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

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

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

Problem 186: Unable to integrate problem.

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

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

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

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):

CannotIntegrate[Cot[a + i 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.

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

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

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

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

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

Problem 195: Unable to integrate problem.

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

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

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

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

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

Problem 196: Unable to integrate problem.

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

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

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

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

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

Problem 197: Unable to integrate problem.

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

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.

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

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.

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

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.

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

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

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

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):

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

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):

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

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):

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

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.

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

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

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

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

CannotIntegrate[Cot[a + 2 Log[x]]^p, x]

Problem 208: Unable to integrate problem.

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

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

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

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

CannotIntegrate[Cot[a + 3 Log[x]]^p, x]

Problem 209: Unable to integrate problem.

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

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

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

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

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

Problem 210: Unable to integrate problem.

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

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):

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

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

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

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):

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

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):

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

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

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

Problem 219: Unable to integrate problem.

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

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

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

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

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

Problem 221: Unable to integrate problem.

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

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

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

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

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

Problem 222: Unable to integrate problem.

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

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):

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

Problem 228: Unable to integrate problem.

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

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):

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

Problem 229: Unable to integrate problem.

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

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):

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

Problem 230: Unable to integrate problem.

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

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

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

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

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

Problem 259: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 41 leaves, ? steps):

$$-x\,\text{Sec}\left[a+b\,\text{Log}[c\,x^n]\right]+b\,n\,x\,\text{Sec}\left[a+b\,\text{Log}[c\,x^n]\right]\,\text{Tan}\left[a+b\,\text{Log}[c\,x^n]\right]$$

Result (type 5, 175 leaves, 7 steps):

$$-2\,e^{i\,a}\,(1-i\,b\,n)\,x\,(c\,x^n)^{i\,b}\,\text{Hypergeometric2F1}\left[1,\,\frac{1}{2}\left(1-\frac{i}{b\,n}\right),\,\frac{1}{2}\left(3-\frac{i}{b\,n}\right),\,-e^{2\,i\,a}\,(c\,x^n)^{2\,i\,b}\right]+$$
$$\frac{16\,b^2\,e^{3\,i\,a}\,n^2\,x\,(c\,x^n)^{3\,i\,b}\,\text{Hypergeometric2F1}\left[3,\,\frac{1}{2}\left(3-\frac{i}{b\,n}\right),\,\frac{1}{2}\left(5-\frac{i}{b\,n}\right),\,-e^{2\,i\,a}\,(c\,x^n)^{2\,i\,b}\right]}{1+3\,i\,b\,n}$$

Problem 260: Result unnecessarily involves higher level functions.

$$\int x^m\,\text{Sec}\left[a+2\,\text{Log}\left[c\,x^{\frac{1}{2}\sqrt{-(1+m)^2}}\right]\right]^3\,dx$$

Optimal (type 3, 110 leaves, ? steps):

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

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.

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

Optimal (type 3, 42 leaves, ? steps):

$$-x \text{Csc}\left[a+b \text{Log}\left[c x^n\right]\right]-b n x \text{Cot}\left[a+b \text{Log}\left[c x^n\right]\right] \text{Csc}\left[a+b \text{Log}\left[c x^n\right]\right]$$

Result (type 5, 172 leaves, 7 steps):

$$2 e^{i a} (i+b n) x \left(c x^n\right)^{i b} \text{Hypergeometric2F1}\left[1, \frac{1}{2}\left(1-\frac{i}{b n}\right), \frac{1}{2}\left(3-\frac{i}{b n}\right), e^{2 i a} \left(c x^n\right)^{2 i b}\right]-\frac{16 b^2 e^{3 i a} n^2 x \left(c x^n\right)^{3 i b} \text{Hypergeometric2F1}\left[3, \frac{1}{2}\left(3-\frac{i}{b n}\right), \frac{1}{2}\left(5-\frac{i}{b n}\right), e^{2 i a} \left(c x^n\right)^{2 i b}\right]}{i-3 b n}$$

Problem 302: Result unnecessarily involves higher level functions.

$$\int x^m \text{Csc}\left[a+2 \text{Log}\left[c\, x^{\frac{1}{2}\sqrt{-(1+m)^2}}\right]\right]^3 dx$$

Optimal (type 3, 110 leaves, ? steps):

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

Result (type 5, 142 leaves, 3 steps):

$$-\frac{1}{i+i m-3 \sqrt{-(1+m)^2}} 8\, e^{3 i a} x^{1+m} \left(c\, x^{\frac{1}{2}\sqrt{-(1+m)^2}}\right)^{6 i} \text{Hypergeometric2F1}\left[3, \frac{1}{2}\left(3-\frac{i (1+m)}{\sqrt{-(1+m)^2}}\right), \frac{1}{2}\left(5-\frac{i (1+m)}{\sqrt{-(1+m)^2}}\right), e^{2 i a} \left(c\, x^{\frac{1}{2}\sqrt{-(1+m)^2}}\right)^{4 i}\right]$$

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.

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

Optimal (type 4, 139 leaves, ? steps):

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

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):

$$e^{\text{Sin}[x]}\,\left(-1+x\,\text{Cos}[x]\right)\,\text{Sec}[x]$$

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 859: Unable to integrate problem.

$$\int\frac{\text{Csc}[x]\,\sqrt{\text{Cos}[x]+\text{Sin}[x]}}{\text{Cos}[x]^{3/2}}\,dx$$

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

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

Result (type 8, 20 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Csc}[x]\sqrt{\text{Cos}[x]+\text{Sin}[x]}}{\text{Cos}[x]^{3/2}},x\right]$$

Problem 860: Result valid but suboptimal antiderivative.

$$\int\frac{\text{Cos}[x]+\text{Sin}[x]}{\sqrt{1+\text{Sin}[2x]}}\,dx$$

Optimal (type 3, 19 leaves, ? steps):

$$\frac{x\sqrt{1+\text{Sin}[2x]}}{\text{Cos}[x]+\text{Sin}[x]}$$

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 915: Unable to integrate problem.

$$\int \text{Cos}\left[\frac{x}{2}\right]^2\text{Tan}\left[\frac{\pi}{4}+\frac{x}{2}\right]dx$$

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

$$\frac{x}{2}-\frac{\text{Cos}[x]}{2}-\text{Log}\left[\text{Cos}\left[\frac{\pi}{4}+\frac{x}{2}\right]\right]$$

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

$$\text{CannotIntegrate}\left[\text{Cos}\left[\frac{x}{2}\right]^2\text{Tan}\left[\frac{\pi}{4}+\frac{x}{2}\right],x\right]$$

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):

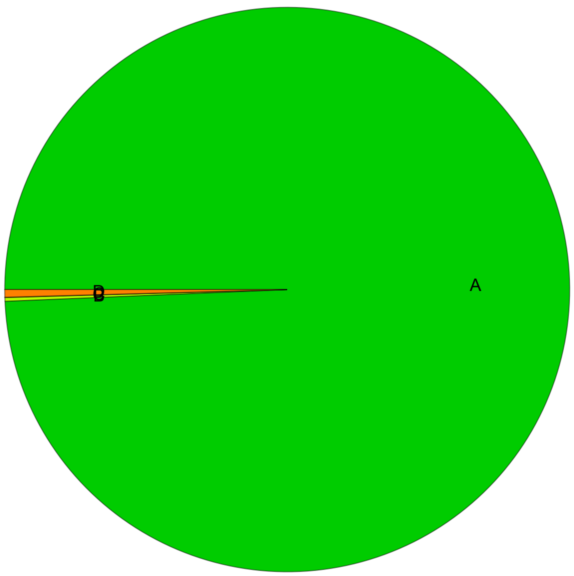
$$\text{Log}\left[1 + e^x \text{Sin}[x]\right]$$

Result (type 8, 36 leaves, 5 steps) :

$$x - \text{CannotIntegrate}\left[\frac{1}{1 + e^x \text{Sin}[x]}, x\right] - \text{CannotIntegrate}\left[\frac{\text{Cot}[x]}{1 + e^x \text{Sin}[x]}, x\right] + \text{Log}[\text{Sin}[x]]$$

Summary of Integration Test Results

22551 integration problems



A - 22402 optimal antiderivatives

B - 47 valid but suboptimal antiderivatives

C - 5 unnecessarily complex antiderivatives

D - 97 unable to integrate problems

E - 0 integration timeouts

F - 0 invalid antiderivatives