Mathematica 11.3 Integration Test Results

Test results for the 525 problems in "6.1.7 hyper^m (a+b sinh^n)^p.m"

Problem 6: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 25 leaves, 2 steps):

$$-\frac{a \text{ArcTanh}[\text{Cosh}[c+d x]]}{d}+\frac{b \text{Cosh}[c+d x]}{d}$$

Result (type 3, 62 leaves):

$$\frac{b \text{Cosh}[c] \text{Cosh}[d x]}{d}-\frac{a \text{Log}\left[\text{Cosh}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{a \text{Log}\left[\text{Sinh}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{b \text{Sinh}[c] \text{Sinh}[d x]}{d}$$

Problem 8: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 40 leaves, 2 steps):

$$\frac{(a-2 b) \text{ArcTanh}[\text{Cosh}[c+d x]]}{2 d}-\frac{a \text{Coth}[c+d x] \text{Csch}[c+d x]}{2 d}$$

Result (type 3, 118 leaves):

$$-\frac{a \text{Csch}\left[\frac{1}{2} (c+d x)\right]^2}{8 d}-\frac{b \text{Log}\left[\text{Cosh}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{a \text{Log}\left[\text{Cosh}\left[\frac{1}{2} (c+d x)\right]\right]}{2 d}+\frac{b \text{Log}\left[\text{Sinh}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}-\frac{a \text{Log}\left[\text{Sinh}\left[\frac{1}{2} (c+d x)\right]\right]}{2 d}-\frac{a \text{Sech}\left[\frac{1}{2} (c+d x)\right]^2}{8 d}$$

Problem 17: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 56 leaves, 5 steps):

$$\frac{a (a-4 b) \text{ArcTanh}[\text{Cosh}[c+d x]]}{2 d}+\frac{b^2 \text{Cosh}[c+d x]}{d}-\frac{a^2 \text{Coth}[c+d x] \text{Csch}[c+d x]}{2 d}$$

Result (type 3, 155 leaves):

$$\frac{b^2 \operatorname{Cosh}[c] \operatorname{Cosh}[d x]}{d}-\frac{a^2 \operatorname{Csch}\left[\frac{1}{2}(c+d x)\right]^2}{8 d}-\frac{2 a b \operatorname{Log}\left[\operatorname{Cosh}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{a^2 \operatorname{Log}\left[\operatorname{Cosh}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}+\frac{2 a b \operatorname{Log}\left[\operatorname{Sinh}\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}-\frac{a^2 \operatorname{Log}\left[\operatorname{Sinh}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}-\frac{a^2 \operatorname{Sech}\left[\frac{1}{2}(c+d x)\right]^2}{8 d}+\frac{b^2 \operatorname{Sinh}[c] \operatorname{Sinh}[d x]}{d}$$

Problem 18: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Csch}[c+d x]^4 \left(a+b \operatorname{Sinh}[c+d x]^2\right)^2 dx$$

Optimal (type 3, 40 leaves, 4 steps):

$$b^2 x+\frac{a (a-2 b) \operatorname{Coth}[c+d x]}{d}-\frac{a^2 \operatorname{Coth}[c+d x]^3}{3 d}$$

Result (type 3, 85 leaves):

$$\left(4 \left(b+a \operatorname{Csch}[c+d x]^2\right)^2 \left(3 b^2 (c+d x)-a \operatorname{Coth}[c+d x] \left(-2 a+6 b+a \operatorname{Csch}[c+d x]^2\right)\right) \operatorname{Sinh}[c+d x]^4\right) \Big/ \left(3 d \left(2 a-b+b \operatorname{Cosh}[2 (c+d x)]\right)^2\right)$$

Problem 26: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 83 leaves, 5 steps):

$$\frac{a^2 (a-6 b) \operatorname{ArcTanh}[\operatorname{Cosh}[c+d x]]}{2 d}+\frac{(3 a-b) b^2 \operatorname{Cosh}[c+d x]}{d}+\frac{b^3 \operatorname{Cosh}[c+d x]^3}{3 d}-\frac{a^3 \operatorname{Coth}[c+d x] \operatorname{Csch}[c+d x]}{2 d}$$

Result (type 3, 561 leaves):

$$\left(6\,(4\,a-b)\,b^2\,\text{Cosh}[c]\,\text{Cosh}[d\,x]\,\text{Sinh}[c+d\,x]^3\,(a\,\text{Csch}[c+d\,x]+b\,\text{Sinh}[c+d\,x])^3\right)\Big/\left(d\,(2\,a-b+b\,\text{Cosh}[2\,c+2\,d\,x])^3\right)+$$
$$\left(2\,b^3\,\text{Cosh}[3\,c]\,\text{Cosh}[3\,d\,x]\,\text{Sinh}[c+d\,x]^3\,(a\,\text{Csch}[c+d\,x]+b\,\text{Sinh}[c+d\,x])^3\right)\Big/\left(3\,d\,(2\,a-b+b\,\text{Cosh}[2\,c+2\,d\,x])^3\right)-$$
$$\frac{a^3\,\text{Csch}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sinh}[c+d\,x]^3\,(a\,\text{Csch}[c+d\,x]+b\,\text{Sinh}[c+d\,x])^3}{d\,(2\,a-b+b\,\text{Cosh}[2\,c+2\,d\,x])^3}+$$
$$\left(4\,(a^3-6\,a^2\,b)\,\text{Log}\left[\text{Cosh}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\text{Sinh}[c+d\,x]^3\,(a\,\text{Csch}[c+d\,x]+b\,\text{Sinh}[c+d\,x])^3\right)\Big/\left(d\,(2\,a-b+b\,\text{Cosh}[2\,c+2\,d\,x])^3\right)-$$
$$\left(4\,(a^3-6\,a^2\,b)\,\text{Log}\left[\text{Sinh}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\text{Sinh}[c+d\,x]^3\,(a\,\text{Csch}[c+d\,x]+b\,\text{Sinh}[c+d\,x])^3\right)\Big/\left(d\,(2\,a-b+b\,\text{Cosh}[2\,c+2\,d\,x])^3\right)-$$
$$\frac{a^3\,\text{Sech}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sinh}[c+d\,x]^3\,(a\,\text{Csch}[c+d\,x]+b\,\text{Sinh}[c+d\,x])^3}{d\,(2\,a-b+b\,\text{Cosh}[2\,c+2\,d\,x])^3}+$$
$$\left(6\,(4\,a-b)\,b^2\,\text{Sinh}[c]\,\text{Sinh}[d\,x]\,\text{Sinh}[c+d\,x]^3\,(a\,\text{Csch}[c+d\,x]+b\,\text{Sinh}[c+d\,x])^3\right)\Big/\left(d\,(2\,a-b+b\,\text{Cosh}[2\,c+2\,d\,x])^3\right)+$$
$$\left(2\,b^3\,\text{Sinh}[3\,c]\,\text{Sinh}[3\,d\,x]\,\text{Sinh}[c+d\,x]^3\,(a\,\text{Csch}[c+d\,x]+b\,\text{Sinh}[c+d\,x])^3\right)\Big/\left(3\,d\,(2\,a-b+b\,\text{Cosh}[2\,c+2\,d\,x])^3\right)$$

Problem 28: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sinh}[c+d\,x]^7}{a+b\,\text{Sinh}[c+d\,x]^2}\,dx$$

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

$$-\frac{a^3\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Cosh}[c+d\,x]}{\sqrt{a-b}}\right]}{\sqrt{a-b}\,b^{7/2}\,d}+\frac{(a^2+a\,b+b^2)\,\text{Cosh}[c+d\,x]}{b^3\,d}-\frac{(a+2\,b)\,\text{Cosh}[c+d\,x]^3}{3\,b^2\,d}+\frac{\text{Cosh}[c+d\,x]^5}{5\,b\,d}$$

Result (type 3, 165 leaves):

$$\frac{1}{240\,b^{7/2}\,d}\left(-\frac{1}{\sqrt{a-b}}240\,a^3\left(\text{ArcTan}\left[\frac{\sqrt{b}-i\,\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a-b}}\right]+\text{ArcTan}\left[\frac{\sqrt{b}+i\,\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a-b}}\right]\right)+\right.$$
$$30\,\sqrt{b}\,(8\,a^2+6\,a\,b+5\,b^2)\,\text{Cosh}[c+d\,x]-$$
$$\left.5\,b^{3/2}\,(4\,a+5\,b)\,\text{Cosh}[3\,(c+d\,x)]+3\,b^{5/2}\,\text{Cosh}[5\,(c+d\,x)]\right)$$

Problem 30: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sinh}[c+d\,x]^5}{a+b\,\text{Sinh}[c+d\,x]^2}\,dx$$

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

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

Result (type 3, 134 leaves):

$$\frac{1}{12\,b^{5/2}\,d}\left(\frac{12\,a^2\left(\text{ArcTan}\left[\frac{\sqrt{b}-i\,\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a-b}}\right]+\text{ArcTan}\left[\frac{\sqrt{b}+i\,\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a-b}}\right]\right)}{\sqrt{a-b}}-3\,\sqrt{b}\,(4\,a+3\,b)\,\text{Cosh}[c+d\,x]+b^{3/2}\,\text{Cosh}[3\,(c+d\,x)]\right)$$

Problem 32: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 56 leaves, 3 steps):

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

Result (type 3, 107 leaves):

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

Problem 34: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 40 leaves, 2 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Cosh}[c+d\,x]}{\sqrt{a-b}}\right]}{\sqrt{a-b}\,\sqrt{b}\,d}$$

Result (type 3, 91 leaves):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a-b}}\right]+\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a-b}}\right]}{\sqrt{a-b}\,\sqrt{b}\,d}$$

Problem 36: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 60 leaves, 4 steps):

$$-\frac{\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Cosh}[c+d\,x]}{\sqrt{a-b}}\right]}{a\sqrt{a-b}\,d}-\frac{\text{ArcTanh}[\text{Cosh}[c+d\,x]]}{a\,d}$$

Result (type 3, 135 leaves):

$$-\frac{1}{a\,d}\left(\frac{\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a-b}}\right]}{\sqrt{a-b}}+\frac{\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a-b}}\right]}{\sqrt{a-b}}+\text{Log}\left[\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)$$

Problem 38: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 88 leaves, 5 steps):

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

Result (type 3, 220 leaves):

$$\left((2a-b+b\,\text{Cosh}[2(c+dx)])\,\text{Csch}[c+dx]^2\right.$$

$$\left(\frac{8\,b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a-b}}\right]}{\sqrt{a-b}}+\frac{8\,b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a-b}}\right]}{\sqrt{a-b}}-\right.$$

$$a\,\text{Csch}\left[\frac{1}{2}(c+dx)\right]^2+4(a+2b)\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}(c+dx)\right]\right]-$$

$$\left.\left.4(a+2b)\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}(c+dx)\right]\right]-a\,\text{Sech}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\Big/\left(16\,a^2\,d\left(b+a\,\text{Csch}[c+dx]^2\right)\right)$$

Problem 40: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Csch}[c+dx]^5}{a+b\,\text{Sinh}[c+dx]^2}\,dx$$

Optimal (type 3, 130 leaves, 6 steps):

$$-\frac{b^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Cosh}[c+dx]}{\sqrt{a-b}}\right]}{a^3\sqrt{a-b}\,d}-\frac{\left(3a^2+4ab+8b^2\right)\text{ArcTanh}[\text{Cosh}[c+dx]]}{8\,a^3\,d}+$$

$$\frac{(3a+4b)\,\text{Coth}[c+dx]\,\text{Csch}[c+dx]}{8\,a^2\,d}-\frac{\text{Coth}[c+dx]\,\text{Csch}[c+dx]^3}{4\,a\,d}$$

Result (type 3, 649 leaves):

$$-\left(\left(b^{5/2}\,\text{ArcTan}\left[\frac{1}{\sqrt{a-b}}\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\sqrt{b}\,\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{i}\,\sqrt{a}\,\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]\right.\right.$$

$$\left.\left.(2\,a-b+b\,\text{Cosh}[2\,(c+d\,x)])\,\text{Csch}[c+d\,x]^2\right)\Big/\left(2\,a^3\,\sqrt{a-b}\,d\,\left(b+a\,\text{Csch}[c+d\,x]^2\right)\right)\right)-$$

$$\left(b^{5/2}\,\text{ArcTan}\left[\frac{1}{\sqrt{a-b}}\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\sqrt{b}\,\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{i}\,\sqrt{a}\,\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]\right.$$

$$\left.(2\,a-b+b\,\text{Cosh}[2\,(c+d\,x)])\,\text{Csch}[c+d\,x]^2\right)\Big/\left(2\,a^3\,\sqrt{a-b}\,d\,\left(b+a\,\text{Csch}[c+d\,x]^2\right)\right)+$$

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

$$\left(64\,a^2\,d\,\left(b+a\,\text{Csch}[c+d\,x]^2\right)\right)-$$

$$\frac{(2\,a-b+b\,\text{Cosh}[2\,(c+d\,x)])\,\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\text{Csch}[c+d\,x]^2}{128\,a\,d\,\left(b+a\,\text{Csch}[c+d\,x]^2\right)}+$$

$$\left(\left(-3\,a^2-4\,a\,b-8\,b^2\right)\,(2\,a-b+b\,\text{Cosh}[2\,(c+d\,x)])\,\text{Csch}[c+d\,x]^2\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\Big/$$

$$\left(16\,a^3\,d\,\left(b+a\,\text{Csch}[c+d\,x]^2\right)\right)+$$

$$\left(\left(3\,a^2+4\,a\,b+8\,b^2\right)\,(2\,a-b+b\,\text{Cosh}[2\,(c+d\,x)])\,\text{Csch}[c+d\,x]^2\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\Big/$$

$$\left(16\,a^3\,d\,\left(b+a\,\text{Csch}[c+d\,x]^2\right)\right)+$$

$$\left((3\,a+4\,b)\,(2\,a-b+b\,\text{Cosh}[2\,(c+d\,x)])\,\text{Csch}[c+d\,x]^2\,\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/$$

$$\left(64\,a^2\,d\,\left(b+a\,\text{Csch}[c+d\,x]^2\right)\right)+$$

$$\frac{(2\,a-b+b\,\text{Cosh}[2\,(c+d\,x)])\,\text{Csch}[c+d\,x]^2\,\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^4}{128\,a\,d\,\left(b+a\,\text{Csch}[c+d\,x]^2\right)}$$

Problem 43: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 3, 141 leaves):

$$\frac{1}{2\,b^{3/2}\,d}\left(\frac{1}{(a-b)^{3/2}}\right.$$

$$(a-2\,b)\left(\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a-b}}\right]+\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a-b}}\right]\right)-$$

$$\left.\frac{2\,a\,\sqrt{b}\,\text{Cosh}[c+d\,x]}{(a-b)\,(2\,a-b+b\,\text{Cosh}[2\,(c+d\,x)])}\right)$$

Problem 45: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 81 leaves, 3 steps):

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

Result (type 3, 130 leaves):

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

$$\left.\frac{2\,\text{Cosh}[c+d\,x]}{(a-b)\,(2\,a-b+b\,\text{Cosh}[2\,(c+d\,x)])}\right)$$

Problem 47: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 110 leaves, 5 steps):

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

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

Result (type 3, 189 leaves):

$$\frac{1}{2 a^2 d}\left(\frac{\sqrt{b}\,(-3 a+2 b)\,\text{ArcTan}\left[\frac{\sqrt{b}-i \sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a-b}}\right]}{(a-b)^{3/2}}+\frac{\sqrt{b}\,(-3 a+2 b)\,\text{ArcTan}\left[\frac{\sqrt{b}+i \sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a-b}}\right]}{(a-b)^{3/2}}-\frac{2 a b\,\text{Cosh}[c+d x]}{(a-b)\,(2 a-b+b\,\text{Cosh}[2 (c+d x)])}-2\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}(c+d x)\right]\right]+2\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}(c+d x)\right]\right]\right)$$

Problem 49: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 161 leaves, 6 steps):

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

Result (type 3, 391 leaves):

$$\frac{1}{32 a^3 d\left(b+a\,\text{Csch}[c+d x]^2\right)^2}(2 a-b+b\,\text{Cosh}[2 (c+d x)])\,\text{Csch}[c+d x]^3\left(\frac{8 a b^2\,\text{Coth}[c+d x]}{a-b}+\frac{1}{(a-b)^{3/2}}4 (5 a-4 b)\, b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}-i \sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a-b}}\right](2 a-b+b\,\text{Cosh}[2 (c+d x)])\,\text{Csch}[c+d x]+\frac{1}{(a-b)^{3/2}}4 (5 a-4 b)\, b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}+i \sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a-b}}\right](2 a-b+b\,\text{Cosh}[2 (c+d x)])\,\text{Csch}[c+d x]-a\,(2 a-b+b\,\text{Cosh}[2 (c+d x)])\,\text{Csch}\left[\frac{1}{2}(c+d x)\right]^2\text{Csch}[c+d x]+4 (a+4 b)\,(2 a-b+b\,\text{Cosh}[2 (c+d x)])\,\text{Csch}[c+d x]\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}(c+d x)\right]\right]-4 (a+4 b)\,(2 a-b+b\,\text{Cosh}[2 (c+d x)])\,\text{Csch}[c+d x]\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}(c+d x)\right]\right]-a\,(2 a-b+b\,\text{Cosh}[2 (c+d x)])\,\text{Csch}[c+d x]\,\text{Sech}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

Problem 52: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 3, 170 leaves):

$$\frac{1}{8 b^{3/2} d}\left(\frac{1}{(a-b)^{5/2}}(a-4 b)\left(\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a-b}}\right]+\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a-b}}\right]\right)+\left(2\sqrt{b}\,\text{Cosh}[c+d x]\left(-2 a^2-5 a b+4 b^2+(a-4 b)\, b\,\text{Cosh}[2 (c+d x)]\right)\right)\Big/\left((a-b)^2\left(2 a-b+b\,\text{Cosh}[2 (c+d x)]\right)^2\right)\right)$$

Problem 54: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 118 leaves, 4 steps):

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

Result (type 3, 149 leaves):

$$\frac{1}{8 d}\left(\frac{3\left(\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a-b}}\right]+\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a-b}}\right]\right)}{(a-b)^{5/2}\sqrt{b}}+\frac{2\,\text{Cosh}[c+d x]\left(10 a-7 b+3 b\,\text{Cosh}[2 (c+d x)]\right)}{(a-b)^2\left(2 a-b+b\,\text{Cosh}[2 (c+d x)]\right)^2}\right)$$

Problem 56: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 166 leaves, 6 steps):

$$-\frac{\sqrt{b} \left(15 a^2-20 a b+8 b^2\right) \text{ArcTan}\left[\frac{\sqrt{b} \text{Cosh}[c+d x]}{\sqrt{a-b}}\right]}{8 a^3 (a-b)^{5/2} d}-\frac{\text{ArcTanh}[\text{Cosh}[c+d x]]}{a^3 d}-\frac{b \text{Cosh}[c+d x]}{4 a (a-b) d \left(a-b+b \text{Cosh}[c+d x]^2\right)^2}-\frac{(7 a-4 b) b \text{Cosh}[c+d x]}{8 a^2 (a-b)^2 d \left(a-b+b \text{Cosh}[c+d x]^2\right)}$$

Result (type 3, 329 leaves):

$$-\frac{1}{8 a^3 (a-b)^{5/2} d}\sqrt{b} \left(15 a^2-20 a b+8 b^2\right) \text{ArcTan}\left[\frac{1}{\sqrt{a-b}}\text{Sech}\left[\frac{1}{2} (c+d x)\right] \left(\sqrt{b} \text{Cosh}\left[\frac{1}{2} (c+d x)\right]-i \sqrt{a} \text{Sinh}\left[\frac{1}{2} (c+d x)\right]\right)\right]-\frac{1}{8 a^3 (a-b)^{5/2} d}\sqrt{b} \left(15 a^2-20 a b+8 b^2\right) \text{ArcTan}\left[\frac{1}{\sqrt{a-b}}\text{Sech}\left[\frac{1}{2} (c+d x)\right] \left(\sqrt{b} \text{Cosh}\left[\frac{1}{2} (c+d x)\right]+i \sqrt{a} \text{Sinh}\left[\frac{1}{2} (c+d x)\right]\right)\right]-\frac{b \text{Cosh}[c+d x]}{a (a-b) d (2 a-b+b \text{Cosh}[2 (c+d x)])^2}+\frac{-7 a b \text{Cosh}[c+d x]+4 b^2 \text{Cosh}[c+d x]}{4 a^2 (a-b)^2 d (2 a-b+b \text{Cosh}[2 (c+d x)])}-\frac{\text{Log}\left[\text{Cosh}\left[\frac{1}{2} (c+d x)\right]\right]}{a^3 d}+\frac{\text{Log}\left[\text{Sinh}\left[\frac{1}{2} (c+d x)\right]\right]}{a^3 d}$$

Problem 58: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 224 leaves, 7 steps):

$$\frac{b^{3/2} \left(35 a^2-56 a b+24 b^2\right) \text{ArcTan}\left[\frac{\sqrt{b} \text{Cosh}[c+d x]}{\sqrt{a-b}}\right]}{8 a^4 (a-b)^{5/2} d}+\frac{(a+6 b) \text{ArcTanh}[\text{Cosh}[c+d x]]}{2 a^4 d}-\frac{(2 a-3 b) b \text{Cosh}[c+d x]}{4 a^2 (a-b) d \left(a-b+b \text{Cosh}[c+d x]^2\right)^2}-\frac{(a-4 b) (4 a-3 b) b \text{Cosh}[c+d x]}{8 a^3 (a-b)^2 d \left(a-b+b \text{Cosh}[c+d x]^2\right)}-\frac{\text{Coth}[c+d x] \text{Csch}[c+d x]}{2 a d \left(a-b+b \text{Cosh}[c+d x]^2\right)^2}$$

Result (type 3, 462 leaves):

$$\frac{1}{64 a^4 d \left(b + a \operatorname{Csch}[c + d x]^2\right)^3} \left(2 a - b + b \operatorname{Cosh}[2 (c + d x)]\right) \operatorname{Csch}[c + d x]^5$$
$$\left(\frac{8 a^2 b^2 \operatorname{Coth}[c + d x]}{a - b} + \frac{2 a (11 a - 8 b) b^2 \left(2 a - b + b \operatorname{Cosh}[2 (c + d x)]\right) \operatorname{Coth}[c + d x]}{(a - b)^2} + \right.$$
$$\frac{1}{(a - b)^{5/2}} b^{3/2} \left(35 a^2 - 56 a b + 24 b^2\right) \operatorname{ArcTan}\left[\frac{\sqrt{b} - i \sqrt{a} \operatorname{Tanh}\left[\frac{1}{2} (c + d x)\right]}{\sqrt{a - b}}\right]$$
$$\left(2 a - b + b \operatorname{Cosh}[2 (c + d x)]\right)^2 \operatorname{Csch}[c + d x] + \frac{1}{(a - b)^{5/2}} b^{3/2} \left(35 a^2 - 56 a b + 24 b^2\right)$$
$$\operatorname{ArcTan}\left[\frac{\sqrt{b} + i \sqrt{a} \operatorname{Tanh}\left[\frac{1}{2} (c + d x)\right]}{\sqrt{a - b}}\right] \left(2 a - b + b \operatorname{Cosh}[2 (c + d x)]\right)^2 \operatorname{Csch}[c + d x] -$$
$$a \left(2 a - b + b \operatorname{Cosh}[2 (c + d x)]\right)^2 \operatorname{Csch}\left[\frac{1}{2} (c + d x)\right]^2 \operatorname{Csch}[c + d x] +$$
$$4 (a + 6 b) \left(2 a - b + b \operatorname{Cosh}[2 (c + d x)]\right)^2 \operatorname{Csch}[c + d x] \operatorname{Log}\left[\operatorname{Cosh}\left[\frac{1}{2} (c + d x)\right]\right] -$$
$$4 (a + 6 b) \left(2 a - b + b \operatorname{Cosh}[2 (c + d x)]\right)^2 \operatorname{Csch}[c + d x] \operatorname{Log}\left[\operatorname{Sinh}\left[\frac{1}{2} (c + d x)\right]\right] -$$
$$\left. a \left(2 a - b + b \operatorname{Cosh}[2 (c + d x)]\right)^2 \operatorname{Csch}[c + d x] \operatorname{Sech}\left[\frac{1}{2} (c + d x)\right]^2\right)$$

Problem 71: Result unnecessarily involves imaginary or complex numbers.

$$\int \operatorname{Sinh}[e + f x]^4 \sqrt{a + b \operatorname{Sinh}[e + f x]^2} \, dx$$

Optimal (type 4, 300 leaves, 7 steps):

$$\frac{(a-4b)\,\text{Cosh}[e+fx]\,\text{Sinh}[e+fx]\,\sqrt{a+b\,\text{Sinh}[e+fx]^2}}{15\,b\,f}+$$

$$\frac{\text{Cosh}[e+fx]\,\text{Sinh}[e+fx]^3\,\sqrt{a+b\,\text{Sinh}[e+fx]^2}}{5\,f}+$$

$$\left(\left(2a^2+3ab-8b^2\right)\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\right.$$

$$\left.\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Bigg/\left(15\,b^2\,f\,\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)-$$

$$\left(\left(a-4b\right)\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\,\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Bigg/$$

$$\left(15\,b\,f\,\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)-$$

$$\frac{\left(2a^2+3ab-8b^2\right)\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,\text{Tanh}[e+fx]}{15\,b^2\,f}$$

Result (type 4, 210 leaves) :

$$\left(16\,i\,a\left(2a^2+3ab-8b^2\right)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\;\text{EllipticE}\left[i\,(e+fx),\frac{b}{a}\right]-\right.$$

$$32\,i\,a\left(a^2+ab-2b^2\right)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\;\text{EllipticF}\left[i\,(e+fx),\frac{b}{a}\right]+$$

$$\sqrt{2}\,b\left(8a^2-48ab+25b^2+4\,(4a-7b)\,b\,\text{Cosh}[2(e+fx)]+3b^2\,\text{Cosh}[4(e+fx)]\right)$$

$$\left.\text{Sinh}[2(e+fx)]\right)\Big/\left(240\,b^2\,f\,\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\right)$$

Problem 74: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Csch}[e+fx]^2\,\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,dx$$

Optimal (type 4, 199 leaves, 7 steps) :

$$-\frac{\text{Coth}[e+f x]\sqrt{a+b\,\text{Sinh}[e+f x]^2}}{f}-\left(\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(f\sqrt{\frac{\text{Sech}[e+f x]^2\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\left(b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(a f\sqrt{\frac{\text{Sech}[e+f x]^2\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\frac{\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{f}$$

Result (type 4, 151 leaves):

$$\left(\sqrt{2}\left(-2a+b-b\,\text{Cosh}[2(e+f x)]\right)\text{Coth}[e+f x]-2 i a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+f x)]}{a}}\,\text{EllipticE}\left[i(e+f x),\frac{b}{a}\right]+2 i(a-b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+f x)]}{a}}\,\text{EllipticF}\left[i(e+f x),\frac{b}{a}\right]\right)\Big/\left(2f\sqrt{2a-b+b\,\text{Cosh}[2(e+f x)]}\right)$$

Problem 75: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Csch}[e+f x]^4\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,dx$$

Optimal (type 4, 276 leaves, 7 steps):

$$\frac{(2a-b)\,\text{Coth}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}}{3af}-\frac{\text{Coth}[e+fx]\,\text{Csch}[e+fx]^2\sqrt{a+b\,\text{Sinh}[e+fx]^2}}{3f}+\left((2a-b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Bigg/\left(3af\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)-\left(b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Bigg/\left(3af\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)-\frac{(2a-b)\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,\text{Tanh}[e+fx]}{3af}$$

Result (type 4, 342 leaves):

$$\frac{1}{f}\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\left(\frac{\left(2\sqrt{2}\,a\,\text{Cosh}[e+fx]-\sqrt{2}\,b\,\text{Cosh}[e+fx]\right)\text{Csch}[e+fx]}{6a}-\frac{\text{Coth}[e+fx]\,\text{Csch}[e+fx]^2}{3\sqrt{2}}\right)+\frac{1}{3af}b\left(\frac{i\,b\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]}{2\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}}-\frac{1}{2b}i\left(-\sqrt{2}\,a+\frac{b}{\sqrt{2}}\right)\left(\frac{2\sqrt{2}\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticE}\left[i(e+fx),\frac{b}{a}\right]}{\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}}-\frac{\sqrt{2}\,(2a-b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]}{\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}}\right)\right)$$

Problem 82: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sinh}[e+fx]^4\left(a+b\,\text{Sinh}[e+fx]^2\right)^{3/2}dx$$

Optimal (type 4, 367 leaves, 8 steps):

$$\frac{\left(a^2-11 a b+8 b^2\right) \text{Cosh}[e+f x] \text{Sinh}[e+f x] \sqrt{a+b \text{Sinh}[e+f x]^2}}{35 b f}+$$

$$\frac{2 (4 a-3 b) \text{Cosh}[e+f x] \text{Sinh}[e+f x]^3 \sqrt{a+b \text{Sinh}[e+f x]^2}}{35 f}+$$

$$\frac{b \text{Cosh}[e+f x] \text{Sinh}[e+f x]^5 \sqrt{a+b \text{Sinh}[e+f x]^2}}{7 f}+$$

$$\left(2 (a-2 b) \left(a^2+4 a b-4 b^2\right) \text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]], 1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b \text{Sinh}[e+f x]^2}\right) \Bigg/ \left(35 b^2 f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b \text{Sinh}[e+f x]^2\right)}{a}}\right)-$$

$$\left(\left(a^2-11 a b+8 b^2\right) \text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]], 1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b \text{Sinh}[e+f x]^2}\right) \Bigg/ \left(35 b f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b \text{Sinh}[e+f x]^2\right)}{a}}\right)-$$

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

Result (type 4, 262 leaves):

$$\frac{1}{2240 b^2 f \sqrt{2 a-b+b \text{Cosh}[2 (e+f x)]}} \left(128 i a \left(a^3+2 a^2 b-12 a b^2+8 b^3\right) \sqrt{\frac{2 a-b+b \text{Cosh}[2 (e+f x)]}{a}} \text{EllipticE}\left[i (e+f x), \frac{b}{a}\right]-\right.$$

$$64 i a \left(2 a^3+3 a^2 b-13 a b^2+8 b^3\right) \sqrt{\frac{2 a-b+b \text{Cosh}[2 (e+f x)]}{a}} \text{EllipticF}\left[i (e+f x), \frac{b}{a}\right]+$$

$$\sqrt{2} b \left(32 a^3-496 a^2 b+684 a b^2-250 b^3+b \left(144 a^2-480 a b+299 b^2\right) \text{Cosh}[2 (e+f x)]+\right.$$

$$\left.\left.2 (26 a-27 b) b^2 \text{Cosh}[4 (e+f x)]+5 b^3 \text{Cosh}[6 (e+f x)]\right) \text{Sinh}[2 (e+f x)]\right)$$

Problem 85: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 204 leaves, 6 steps):

$$-\frac{a\,\text{Coth}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{f}-\left((a+b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Bigg/\left(f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\left(2\,b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Bigg/\left(f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\frac{(a+b)\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{f}$$

Result (type 4, 155 leaves):

$$-\left(\left(a\left(\sqrt{2}\,\left(2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]\right)\text{Coth}[e+f\,x]+2\,i\,(a+b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticE}\left[i\,(e+f\,x),\frac{b}{a}\right]-2\,i\,(a-b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[i\,(e+f\,x),\frac{b}{a}\right]\right)\right)\Bigg/\left(2\,f\,\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}\right)\right)$$

Problem 86: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Csch}[e+f\,x]^4\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}\,dx$$

Optimal (type 4, 267 leaves, 7 steps):

$$\frac{2\,(a-2\,b)\,\text{Coth}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{3\,f}-\frac{a\,\text{Coth}[e+f\,x]\,\text{Csch}[e+f\,x]^2\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{3\,f}+\left(2\,(a-2\,b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)-\left((a-3\,b)\,b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,a\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)-\frac{2\,(a-2\,b)\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{3\,f}$$

Result (type 4, 335 leaves) :

$$\frac{1}{f}\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}\left(\frac{1}{3}\left(\sqrt{2}\,a\,\text{Cosh}[e+f\,x]-2\,\sqrt{2}\,b\,\text{Cosh}[e+f\,x]\right)\text{Csch}[e+f\,x]-\frac{a\,\text{Coth}[e+f\,x]\,\text{Csch}[e+f\,x]^2}{3\,\sqrt{2}}\right)+\frac{1}{3\,f}\sqrt{2}\,b\left(-\frac{i\,b\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[i\,(e+f\,x),\,\frac{b}{a}\right]}{\sqrt{2}\,\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}-\frac{1}{2\,b}\,i\,(-a+2\,b)\left(\frac{2\,\sqrt{2}\,a\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticE}\left[i\,(e+f\,x),\,\frac{b}{a}\right]}{\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}-\frac{\sqrt{2}\,(2\,a-b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[i\,(e+f\,x),\,\frac{b}{a}\right]}{\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}\right)\right)$$

Problem 102: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sinh}[e+f\,x]^4}{\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}\,dx$$

Optimal (type 4, 229 leaves, 6 steps) :

$$\frac{\text{Cosh}[e+f x]\,\text{Sinh}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}}{3\,b\,f}+\left(2\,(a+b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3\,b^2\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,(a+b\,\text{Sinh}[e+f x]^2)}{a}}\right)-\left(\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3\,b\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,(a+b\,\text{Sinh}[e+f x]^2)}{a}}\right)-\frac{2\,(a+b)\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{3\,b^2\,f}$$

Result (type 4, 168 leaves) :

$$\left(4\,i\,\sqrt{2}\,a\,(a+b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticE}\left[i\,(e+f x),\frac{b}{a}\right]-2\,i\,\sqrt{2}\,a\,(2\,a+b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticF}\left[i\,(e+f x),\frac{b}{a}\right]+b\,(2\,a-b+b\,\text{Cosh}[2\,(e+f x)])\,\text{Sinh}[2\,(e+f x)]\right)\Big/\left(6\,b^2\,f\,\sqrt{4\,a-2\,b+2\,b\,\text{Cosh}[2\,(e+f x)]}\right)$$

Problem 105: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 134 leaves, 5 steps) :

$$-\frac{\text{Coth}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}}{a\,f}-\left(\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(a\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,(a+b\,\text{Sinh}[e+f x]^2)}{a}}\right)+\frac{\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{a\,f}$$

Result (type 4, 150 leaves) :

$$\left(\sqrt{2}\,\left(-2\,a+b-b\,\text{Cosh}\left[2\,\left(e+f\,x\right)\right]\right)\,\text{Coth}[e+f\,x]-2\,\text{i}\,a\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}\left[2\,\left(e+f\,x\right)\right]}{a}}\,\text{EllipticE}\left[\text{i}\,\left(e+f\,x\right),\,\frac{b}{a}\right]+2\,\text{i}\,a\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}\left[2\,\left(e+f\,x\right)\right]}{a}}\,\text{EllipticF}\left[\text{i}\,\left(e+f\,x\right),\,\frac{b}{a}\right]\right)\Big/\left(2\,a\,f\,\sqrt{2\,a-b+b\,\text{Cosh}\left[2\,\left(e+f\,x\right)\right]}\right)$$

Problem 106: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Csch}[e+f\,x]^4}{\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}\,dx$$

Optimal (type 4, 267 leaves, 7 steps):

$$\frac{2\,\left(a+b\right)\,\text{Coth}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{3\,a^2\,f}-\frac{\text{Coth}[e+f\,x]\,\text{Csch}[e+f\,x]^2\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{3\,a\,f}+\left(2\,\left(a+b\right)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,a^2\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)-\left(b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,a^2\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)-\frac{2\,\left(a+b\right)\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{3\,a^2\,f}$$

Result (type 4, 338 leaves):

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

$$\frac{1}{3\,a^2\,f}\sqrt{2}\,b\left(\frac{\text{i}\,b\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[\text{i}\,(e+f\,x),\frac{b}{a}\right]}{\sqrt{2}\,\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}-\frac{1}{2\,b}\right.$$

$$\text{i}\,(a+b)\left(\frac{2\,\sqrt{2}\,a\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticE}\left[\text{i}\,(e+f\,x),\frac{b}{a}\right]}{\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}-\right.$$

$$\left.\left.\frac{\sqrt{2}\,(2\,a-b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[\text{i}\,(e+f\,x),\frac{b}{a}\right]}{\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}\right)\right)$$

Problem 111: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sinh}[e+f\,x]^6}{\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}}\,dx$$

Optimal (type 4, 341 leaves, 7 steps):

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

$$\left(\left(8\,a^2-3\,a\,b-2\,b^2\right)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\right.$$

$$\left.\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,(a-b)\,b^3\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)-$$

$$\left((4\,a-b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/$$

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

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

Result (type 4, 211 leaves):

$$\left(2\,i\,\sqrt{2}\,a\,\left(8\,a^2-3\,a\,b-2\,b^2\right)\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\;\text{EllipticE}\left[i\,(e+f\,x),\,\frac{b}{a}\right]-2\,i\,\sqrt{2}\,a\,\left(8\,a^2-7\,a\,b-b^2\right)\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\;\text{EllipticF}\left[i\,(e+f\,x),\,\frac{b}{a}\right]-b\,\left(-8\,a^2+3\,a\,b-b^2+b\,(-a+b)\,\text{Cosh}[2\,(e+f\,x)]\right)\text{Sinh}[2\,(e+f\,x)]\right)\Big/\left(6\,(a-b)\,b^3\,f\,\sqrt{4\,a-2\,b+2\,b\,\text{Cosh}[2\,(e+f\,x)]}\right)$$

Problem 112: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sinh}[e+f\,x]^4}{\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}}\,dx$$

Optimal (type 4, 256 leaves, 6 steps):

$$-\frac{a\,\text{Cosh}[e+f\,x]\,\text{Sinh}[e+f\,x]}{(a-b)\,b\,f\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}-\left((2\,a-b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left((a-b)\,b^2\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\left(\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left((a-b)\,b\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\frac{(2\,a-b)\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\;\text{Tanh}[e+f\,x]}{(a-b)\,b^2\,f}$$

Result (type 4, 156 leaves):

$$\left(a\left(-2\,i\,(2a-b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticE}\left[i\,(e+fx),\frac{b}{a}\right]+4\,i\,(a-b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticF}\left[i\,(e+fx),\frac{b}{a}\right]-\sqrt{2}\,b\,\text{Sinh}[2(e+fx)]\right)\right)\Big/\left(2(a-b)\,b^2 f\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\right)$$

Problem 115: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 290 leaves, 7 steps):

$$-\frac{b\,\text{Coth}[e+fx]}{a(a-b)f\sqrt{a+b\,\text{Sinh}[e+fx]^2}}-\frac{(a-2b)\,\text{Coth}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}}{a^2(a-b)f}-\left((a-2b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Big/\left(a^2(a-b)f\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)-\left(b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Big/\left(a^2(a-b)f\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)+\frac{(a-2b)\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,\text{Tanh}[e+fx]}{a^2(a-b)f}$$

Result (type 4, 185 leaves):

$$\left(-\left(2 a^2-3 a b+2 b^2+(a-2 b) b \operatorname{Cosh}[2 (e+f x)]\right) \operatorname{Coth}[e+f x]-\right.$$

$$i \sqrt{2}\, a (a-2 b) \sqrt{\frac{2 a-b+b \operatorname{Cosh}[2 (e+f x)]}{a}} \operatorname{EllipticE}\left[i (e+f x), \frac{b}{a}\right]+$$

$$\left.i \sqrt{2}\, a (a-b) \sqrt{\frac{2 a-b+b \operatorname{Cosh}[2 (e+f x)]}{a}} \operatorname{EllipticF}\left[i (e+f x), \frac{b}{a}\right]\right) \Big/$$

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

Problem 120: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\operatorname{Sinh}[e+f x]^6}{\left(a+b \operatorname{Sinh}[e+f x]^2\right)^{5/2}} \, dx$$

Optimal (type 4, 344 leaves, 7 steps):

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

$$\left(\left(8 a^2-13 a b+3 b^2\right) \operatorname{EllipticE}\left[\operatorname{ArcTan}[\operatorname{Sinh}[e+f x]], 1-\frac{b}{a}\right] \operatorname{Sech}[e+f x]\right.$$

$$\left.\sqrt{a+b \operatorname{Sinh}[e+f x]^2}\right) \Big/ \left(3 (a-b)^2 b^3 f \sqrt{\frac{\operatorname{Sech}[e+f x]^2 \left(a+b \operatorname{Sinh}[e+f x]^2\right)}{a}}\right)+$$

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

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

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

Result (type 4, 207 leaves):

$$\left(a\left(-2\,i\,a\,(8a^2-13ab+3b^2)\left(\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}\right)^{3/2}\text{EllipticE}\left[i(e+fx),\frac{b}{a}\right]+2\,i\,a\,(8a^2-17ab+9b^2)\left(\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}\right)^{3/2}\text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]+\sqrt{2}\,b\,(-8a^2+17ab-7b^2+b(-5a+7b)\,\text{Cosh}[2(e+fx)])\,\text{Sinh}[2(e+fx)]\right)\right)\Big/\left(6(a-b)^2b^3f\,(2a-b+b\,\text{Cosh}[2(e+fx)])^{3/2}\right)$$

Problem 121: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sinh}[e+fx]^4}{(a+b\,\text{Sinh}[e+fx]^2)^{5/2}}\,dx$$

Optimal (type 4, 244 leaves, 5 steps):

$$-\frac{a\,\text{Cosh}[e+fx]\,\text{Sinh}[e+fx]}{3(a-b)bf(a+b\,\text{Sinh}[e+fx]^2)^{3/2}}+\frac{2\sqrt{a}\,(a-2b)\,\text{Cosh}[e+fx]\,\text{EllipticE}\left[\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sinh}[e+fx]}{\sqrt{a}}\right],1-\frac{a}{b}\right]}{3(a-b)^2b^{3/2}f\sqrt{\frac{a\,\text{Cosh}[e+fx]^2}{a+b\,\text{Sinh}[e+fx]^2}}\sqrt{a+b\,\text{Sinh}[e+fx]^2}}-\left((a-3b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Big/\left(3a(a-b)^2bf\sqrt{\frac{\text{Sech}[e+fx]^2(a+b\,\text{Sinh}[e+fx]^2)}{a}}\right)$$

Result (type 4, 198 leaves):

$$\left(2\,i\,a^2(a-2b)\left(\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}\right)^{3/2}\text{EllipticE}\left[i(e+fx),\frac{b}{a}\right]-i\,a\,(2a^2-5ab+3b^2)\left(\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}\right)^{3/2}\text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]-\sqrt{2}\,b\,(-a^2+4ab-2b^2-(a-2b)\,b\,\text{Cosh}[2(e+fx)])\,\text{Sinh}[2(e+fx)]\right)\Big/\left(3(a-b)^2b^2f\,(2a-b+b\,\text{Cosh}[2(e+fx)])^{3/2}\right)$$

Problem 124: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Csch}[e+fx]^2}{(a+b\,\text{Sinh}[e+fx]^2)^{5/2}}\,dx$$

Optimal (type 4, 385 leaves, 8 steps):

$$-\frac{b\,\text{Coth}[e+f x]}{3 a (a-b) f \left(a+b\,\text{Sinh}[e+f x]^2\right)^{3/2}}-\frac{2 (3 a-2 b) b\,\text{Coth}[e+f x]}{3 a^2 (a-b)^2 f \sqrt{a+b\,\text{Sinh}[e+f x]^2}}-\frac{\left(3 a^2-13 a b+8 b^2\right) \text{Coth}[e+f x] \sqrt{a+b\,\text{Sinh}[e+f x]^2}}{3 a^3 (a-b)^2 f}-\left(\left(3 a^2-13 a b+8 b^2\right) \text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3 a^3 (a-b)^2 f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)-\left(2 (3 a-2 b) b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3 a^3 (a-b)^2 f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\frac{\left(3 a^2-13 a b+8 b^2\right) \sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{3 a^3 (a-b)^2 f}$$

Result (type 4, 234 leaves):

$$\frac{1}{12 a^3 (a-b)^2 f \left(2 a-b+b\,\text{Cosh}[2 (e+f x)]\right)^{3/2}}\,\mathrm{i}\left(4 a^2 \left(\frac{2 a-b+b\,\text{Cosh}[2 (e+f x)]}{a}\right)^{3/2} \left(\left(-3 a^2+13 a b-8 b^2\right) \text{EllipticE}\left[\mathrm{i} (e+f x),\frac{b}{a}\right]+\left(3 a^2-7 a b+4 b^2\right) \text{EllipticF}\left[\mathrm{i} (e+f x),\frac{b}{a}\right]\right)+2 \mathrm{i} \sqrt{2} \left(3 (a-b)^2 \left(2 a-b+b\,\text{Cosh}[2 (e+f x)]\right)^2 \text{Coth}[e+f x]-2 a (a-b) b^2\,\text{Sinh}[2 (e+f x)]-(7 a-5 b) b^2 \left(2 a-b+b\,\text{Cosh}[2 (e+f x)]\right) \text{Sinh}[2 (e+f x)]\right)\right)$$

Problem 130: Unable to integrate problem.

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

Optimal (type 6, 128 leaves, 3 steps):

$$\frac{1}{f} d\,\text{AppellF1}\left[\frac{1}{2},\frac{1-m}{2},-p,\frac{3}{2},\text{Cosh}[e+f x]^2,-\frac{b\,\text{Cosh}[e+f x]^2}{a-b}\right] \text{Cosh}[e+f x] \left(a-b+b\,\text{Cosh}[e+f x]^2\right)^p \left(1+\frac{b\,\text{Cosh}[e+f x]^2}{a-b}\right)^{-p} (d\,\text{Sinh}[e+f x])^{-1+m} \left(-\text{Sinh}[e+f x]^2\right)^{\frac{1-m}{2}}$$

Result (type 8, 27 leaves):

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

Problem 131: Unable to integrate problem.

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

Optimal (type 5, 226 leaves, 5 steps):

$$-\frac{(3\,a+2\,b\,(2+p))\,\text{Cosh}[e+f\,x]\,\left(a-b+b\,\text{Cosh}[e+f\,x]^2\right)^{1+p}}{b^2\,f\,(3+2\,p)\,(5+2\,p)}+$$
$$\left(\left(3\,a^2+4\,a\,b\,(1+p)+4\,b^2\,\left(2+3\,p+p^2\right)\right)\,\text{Cosh}[e+f\,x]\,\left(a-b+b\,\text{Cosh}[e+f\,x]^2\right)^p\right.$$
$$\left.\left(1+\frac{b\,\text{Cosh}[e+f\,x]^2}{a-b}\right)^{-p}\,\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Cosh}[e+f\,x]^2}{a-b}\right]\right)\Big/$$
$$\left(b^2\,f\,(3+2\,p)\,(5+2\,p)\right)+\frac{\text{Cosh}[e+f\,x]\,\left(a-b+b\,\text{Cosh}[e+f\,x]^2\right)^{1+p}\,\text{Sinh}[e+f\,x]^2}{b\,f\,(5+2\,p)}$$

Result (type 8, 25 leaves):

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

Problem 132: Unable to integrate problem.

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

Optimal (type 5, 137 leaves, 4 steps):

$$\frac{\text{Cosh}[e+f\,x]\,\left(a-b+b\,\text{Cosh}[e+f\,x]^2\right)^{1+p}}{b\,f\,(3+2\,p)}-\frac{1}{b\,f\,(3+2\,p)}$$
$$(a+2\,b\,(1+p))\,\text{Cosh}[e+f\,x]\,\left(a-b+b\,\text{Cosh}[e+f\,x]^2\right)^p$$
$$\left(1+\frac{b\,\text{Cosh}[e+f\,x]^2}{a-b}\right)^{-p}\,\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Cosh}[e+f\,x]^2}{a-b}\right]$$

Result (type 8, 25 leaves):

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

Problem 134: Unable to integrate problem.

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

Optimal (type 6, 88 leaves, 3 steps):

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

Result (type 8, 23 leaves) :

$$\int\text{Csch}[e+fx]\left(a+b\,\text{Sinh}[e+fx]^2\right)^p\,dx$$

Problem 135: Unable to integrate problem.

$$\int\text{Csch}[e+fx]^3\left(a+b\,\text{Sinh}[e+fx]^2\right)^p\,dx$$

Optimal (type 6, 87 leaves, 3 steps) :

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

Result (type 8, 25 leaves) :

$$\int\text{Csch}[e+fx]^3\left(a+b\,\text{Sinh}[e+fx]^2\right)^p\,dx$$

Problem 136: Unable to integrate problem.

$$\int\text{Csch}[e+fx]^5\left(a+b\,\text{Sinh}[e+fx]^2\right)^p\,dx$$

Optimal (type 6, 88 leaves, 3 steps) :

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

Result (type 8, 25 leaves) :

$$\int\text{Csch}[e+fx]^5\left(a+b\,\text{Sinh}[e+fx]^2\right)^p\,dx$$

Problem 137: Unable to integrate problem.

$$\int\text{Sinh}[e+fx]^4\left(a+b\,\text{Sinh}[e+fx]^2\right)^p\,dx$$

Optimal (type 6, 103 leaves, 3 steps) :

$$\frac{1}{5 f}\text{AppellF1}\left[\frac{5}{2},\frac{1}{2},-p,\frac{7}{2},-\text{Sinh}[e+f x]^2,-\frac{b\,\text{Sinh}[e+f x]^2}{a}\right]\sqrt{\text{Cosh}[e+f x]^2}\;\text{Sinh}[e+f x]^4\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Sinh}[e+f x]^2}{a}\right)^{-p}\text{Tanh}[e+f x]$$

Result (type 8, 25 leaves):

$$\int \text{Sinh}[e+f x]^4\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\,dx$$

Problem 138: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 101 leaves, 3 steps):

$$\frac{1}{3 f}\text{AppellF1}\left[\frac{3}{2},2+p,-p,\frac{5}{2},\text{Tanh}[e+f x]^2,\frac{(a-b)\,\text{Tanh}[e+f x]^2}{a}\right]\left(\text{Sech}[e+f x]^2\right)^p\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\text{Tanh}[e+f x]^3\left(1-\frac{(a-b)\,\text{Tanh}[e+f x]^2}{a}\right)^{-p}$$

Result (type 6, 250 leaves):

$$\left(2^{-2-p}\sqrt{\frac{b\,\text{Cosh}[e+f x]^2}{-a+b}}\left(2 a-b+b\,\text{Cosh}[2(e+f x)]\right)^{1+p}\left(-2 a(2+p)\,\text{AppellF1}\left[1+p,\frac{1}{2},\frac{1}{2},2+p,\frac{2 a-b+b\,\text{Cosh}[2(e+f x)]}{2 a},\frac{2 a-b+b\,\text{Cosh}[2(e+f x)]}{2(a-b)}\right]+(1+p)\,\text{AppellF1}\left[2+p,\frac{1}{2},\frac{1}{2},3+p,\frac{2 a-b+b\,\text{Cosh}[2(e+f x)]}{2 a},\frac{2 a-b+b\,\text{Cosh}[2(e+f x)]}{2(a-b)}\right]\left(2 a-b+b\,\text{Cosh}[2(e+f x)]\right)\right)\text{Csch}[2(e+f x)]\sqrt{-\frac{b\,\text{Sinh}[e+f x]^2}{a}}\right)\Big/\left(b^2 f(1+p)(2+p)\right)$$

Problem 139: Unable to integrate problem.

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

Optimal (type 6, 99 leaves, 3 steps):

$$-\frac{1}{f}\text{AppellF1}\left[-\frac{1}{2},\frac{1}{2},-p,\frac{1}{2},-\text{Sinh}[e+f x]^2,-\frac{b\,\text{Sinh}[e+f x]^2}{a}\right]\sqrt{\text{Cosh}[e+f x]^2}\;\text{Csch}[e+f x]\,\text{Sech}[e+f x]\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Sinh}[e+f x]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

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

Problem 140: Unable to integrate problem.

$$\int \text{Csch}[e+f x]^4 \left(a+b \,\text{Sinh}[e+f x]^2\right)^p \, dx$$

Optimal (type 6, 103 leaves, 3 steps):

$$-\frac{1}{3 f}\text{AppellF1}\left[-\frac{3}{2},\frac{1}{2},-p,-\frac{1}{2},-\text{Sinh}[e+f x]^2,-\frac{b \,\text{Sinh}[e+f x]^2}{a}\right] \sqrt{\text{Cosh}[e+f x]^2}\, \text{Csch}[e+f x]^3 \,\text{Sech}[e+f x] \left(a+b \,\text{Sinh}[e+f x]^2\right)^p \left(1+\frac{b \,\text{Sinh}[e+f x]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \text{Csch}[e+f x]^4 \left(a+b \,\text{Sinh}[e+f x]^2\right)^p \, dx$$

Problem 148: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 39 leaves, 4 steps):

$$b x+\frac{a \,\text{ArcTanh}[\text{Cosh}[c+d x]]}{2 d}-\frac{a \,\text{Coth}[c+d x] \,\text{Csch}[c+d x]}{2 d}$$

Result (type 3, 82 leaves):

$$b x-\frac{a \,\text{Csch}\left[\frac{1}{2} (c+d x)\right]^2}{8 d}+\frac{a \,\text{Log}\left[\text{Cosh}\left[\frac{1}{2} (c+d x)\right]\right]}{2 d}-\frac{a \,\text{Log}\left[\text{Sinh}\left[\frac{1}{2} (c+d x)\right]\right]}{2 d}-\frac{a \,\text{Sech}\left[\frac{1}{2} (c+d x)\right]^2}{8 d}$$

Problem 159: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 88 leaves, 6 steps):

$$b^2 x+\frac{a b \,\text{ArcTanh}[\text{Cosh}[c+d x]]}{d}-\frac{a^2 \,\text{Coth}[c+d x]}{d}+\frac{2 a^2 \,\text{Coth}[c+d x]^3}{3 d}-\frac{a^2 \,\text{Coth}[c+d x]^5}{5 d}-\frac{a b \,\text{Coth}[c+d x] \,\text{Csch}[c+d x]}{d}$$

Result (type 3, 216 leaves):

$$\frac{1}{480\,d}\left(-128\,a^2\,\text{Coth}\left[\frac{1}{2}\,(c+d\,x)\right]-120\,a\,b\,\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^2+\frac{19}{2}\,a^2\,\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\text{Sinh}[c+d\,x]-\frac{3}{2}\,a^2\,\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^6\,\text{Sinh}[c+d\,x]+8\left(60\,b^2\,c+60\,b^2\,d\,x+60\,a\,b\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-60\,a\,b\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-15\,a\,b\,\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^2-19\,a^2\,\text{Csch}[c+d\,x]^3\,\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]^4-12\,a^2\,\text{Csch}[c+d\,x]^5\,\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]^6-16\,a^2\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)$$

Problem 171: Result is not expressed in closed-form.

$$\int \frac{\text{Sinh}[c+d\,x]^6}{a+b\,\text{Sinh}[c+d\,x]^3}\,dx$$

Optimal (type 3, 328 leaves, 15 steps):

$$-\frac{a\,x}{b^2}-\frac{2\,(-1)^{2/3}\,a^{4/3}\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{1/6}\,b^{1/3}+i\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,b^2\,d}-\frac{2\,(-1)^{2/3}\,a^{4/3}\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{5/6}\,b^{1/3}+i\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}\,b^2\,d}-\frac{2\,a^{4/3}\,\text{ArcTanh}\left[\frac{b^{1/3}-a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}+b^{2/3}}}\right]}{3\,\sqrt{a^{2/3}+b^{2/3}}\,b^2\,d}-\frac{\text{Cosh}[c+d\,x]}{b\,d}+\frac{\text{Cosh}[c+d\,x]^3}{3\,b\,d}$$

Result (type 7, 168 leaves):

$$\frac{1}{12\,b^2\,d}\left(-12\,a\,c-12\,a\,d\,x-9\,b\,\text{Cosh}[c+d\,x]+b\,\text{Cosh}\left[3\,(c+d\,x)\right]+8\,a^2\,\text{RootSum}\left[-b+3\,b\,\#1^2+8\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\left(c\,\#1+d\,x\,\#1+2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\right]\,\#1\right)\Big/\left(b+4\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\right]\right)$$

Problem 172: Result is not expressed in closed-form.

$$\int \frac{\text{Sinh}[c+d\,x]^5}{a+b\,\text{Sinh}[c+d\,x]^3}\,dx$$

Optimal (type 3, 295 leaves, 15 steps):

$$-\frac{x}{2\,b}+\frac{2\,a\,\text{ArcTan}\left[\frac{(-1)^{5/6}\left((-1)^{1/6}\,b^{1/3}+i\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{-(-1)^{2/3}\,a^{2/3}-b^{2/3}}}\right]}{3\,\sqrt{-(-1)^{2/3}\,a^{2/3}-b^{2/3}}\;b^{5/3}\,d}+$$

$$\frac{2\,a\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{5/6}\,b^{1/3}+i\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}\;b^{5/3}\,d}+$$

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

Result (type 7, 299 leaves):

$$\frac{1}{12\,b\,d}\Bigg(-6\,(c+d\,x)-2\,a\,\text{RootSum}\Big[-b+3\,b\,\#1^2+8\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\ \frac{1}{b\,\#1+4\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5}$$
$$\Big(c+d\,x+2\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]-2\,c\,\#1^2-2\,d\,x\,\#1^2-4\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^2+c\,\#1^4+$$
$$d\,x\,\#1^4+2\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^4\Big)\,\&\Big]+3\,\text{Sinh}[2\,(c+d\,x)]\Bigg)$$

Problem 173: Result is not expressed in closed-form.

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

Optimal (type 3, 303 leaves, 14 steps):

$$-\frac{2\,a^{2/3}\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{1/6}\,b^{1/3}+i\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}-(-1)^{2/3}\,b^{2/3}}\;b^{4/3}\,d}+$$

$$\frac{2\,(-1)^{1/3}\,a^{2/3}\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{5/6}\,b^{1/3}+i\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}\;b^{4/3}\,d}-$$

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

Result (type 7, 214 leaves):

$$\frac{1}{3\,b\,d}\left(3\,\text{Cosh}[c+d\,x]-a\,\text{RootSum}\left[-b+3\,b\,\#1^2+8\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\left(-c-d\,x-2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\right]+c\,\#1^2+d\,x\,\#1^2+2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\right]\,\#1^2\right)\Big/\left(b+4\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\right]\right)$$

Problem 174: Result is not expressed in closed-form.

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

Optimal (type 3, 294 leaves, 13 steps):

$$\frac{x}{b}+\frac{2\,(-1)^{2/3}\,a^{1/3}\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{1/6}\,b^{1/3}+i\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,b\,d}+\frac{2\,(-1)^{2/3}\,a^{1/3}\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{5/6}\,b^{1/3}+i\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}\,b\,d}+\frac{2\,a^{1/3}\,\text{ArcTanh}\left[\frac{b^{1/3}-a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}+b^{2/3}}}\right]}{3\,\sqrt{a^{2/3}+b^{2/3}}\,b\,d}$$

Result (type 7, 145 leaves):

$$\frac{1}{3\,b\,d}\left(3\,c+3\,d\,x-2\,a\,\text{RootSum}\left[-b+3\,b\,\#1^2+8\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\left(c\,\#1+d\,x\,\#1+2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\right]\,\#1\right)\Big/\left(b+4\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\right]\right)$$

Problem 175: Result is not expressed in closed-form.

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

Optimal (type 3, 262 leaves, 11 steps):

$$-\frac{2\,\text{ArcTan}\left[\frac{(-1)^{5/6}\left((-1)^{1/6}\,b^{1/3}+\mathrm{i}\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{-(-1)^{2/3}\,a^{2/3}-b^{2/3}}}\right]}{3\,\sqrt{-(-1)^{2/3}\,a^{2/3}-b^{2/3}}\;b^{2/3}\,d}-\frac{2\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{5/6}\,b^{1/3}+\mathrm{i}\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}\;b^{2/3}\,d}-\frac{2\,\text{ArcTanh}\left[\frac{b^{1/3}-a^{1/3}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}+b^{2/3}}}\right]}{3\,\sqrt{a^{2/3}+b^{2/3}}\;b^{2/3}\,d}$$

Result (type 7, 275 leaves):

$$\frac{1}{6\,d}\text{RootSum}\Big[-b+3\,b\,\#1^2+8\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\ \Big(c+d\,x+2\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}(c+d\,x)\Big]\,\#1\Big]-2\,c\,\#1^2-2\,d\,x\,\#1^2-4\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}(c+d\,x)\Big]\,\#1\Big]\,\#1^2+c\,\#1^4+d\,x\,\#1^4+2\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}(c+d\,x)\Big]\,\#1\Big]\,\#1^4\Big)\Big/\left(b\,\#1+4\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5\right)\,\&\Big]$$

Problem 176: Result is not expressed in closed-form.

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

Optimal (type 3, 290 leaves, 11 steps):

$$\frac{2\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{1/6}\,b^{1/3}+\mathrm{i}\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,a^{1/3}\,\sqrt{(-1)^{1/3}\,a^{2/3}-(-1)^{2/3}\,b^{2/3}}\;b^{1/3}\,d}-\frac{2\,(-1)^{1/3}\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{5/6}\,b^{1/3}+\mathrm{i}\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}}\right]}{3\,a^{1/3}\,\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}\;b^{1/3}\,d}+\frac{2\,\text{ArcTanh}\left[\frac{b^{1/3}-a^{1/3}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}+b^{2/3}}}\right]}{3\,a^{1/3}\,\sqrt{a^{2/3}+b^{2/3}}\;b^{1/3}\,d}$$

Result (type 7, 199 leaves):

$$\frac{1}{3 d}\text{RootSum}\Big[-b+3 b \#1^2+8 a \#1^3-3 b \#1^4+b \#1^6\&,\Big(-c-d x-2 \text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]-\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]+\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]\#1-\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]\#1\Big]+c \#1^2+d x \#1^2+2 \text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]-\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]+\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]\#1-\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]\#1\Big]\#1^2\Big)\Big/\left(b+4 a \#1-2 b \#1^2+b \#1^4\right)\&\Big]$$

Problem 177: Result is not expressed in closed-form.

$$\int \frac{1}{a+b \text{Sinh}[c+d x]^3}\, dx$$

Optimal (type 3, 280 leaves, 11 steps):

$$-\frac{2(-1)^{2/3}\text{ArcTan}\Big[\frac{(-1)^{1/6}\left((-1)^{1/6} b^{1/3}+i a^{1/3}\text{Tanh}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{(-1)^{1/3}a^{2/3}-(-1)^{2/3}b^{2/3}}}\Big]}{3 a^{2/3}\sqrt{(-1)^{1/3}a^{2/3}-(-1)^{2/3}b^{2/3}}\, d}-\frac{2(-1)^{2/3}\text{ArcTan}\Big[\frac{(-1)^{1/6}\left((-1)^{5/6} b^{1/3}+i a^{1/3}\text{Tanh}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{(-1)^{1/3}a^{2/3}-b^{2/3}}}\Big]}{3 a^{2/3}\sqrt{(-1)^{1/3}a^{2/3}-b^{2/3}}\, d}-\frac{2\text{ArcTanh}\Big[\frac{b^{1/3}-a^{1/3}\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^{2/3}+b^{2/3}}}\Big]}{3 a^{2/3}\sqrt{a^{2/3}+b^{2/3}}\, d}$$

Result (type 7, 131 leaves):

$$\frac{1}{3 d}2\,\text{RootSum}\Big[-b+3 b \#1^2+8 a \#1^3-3 b \#1^4+b \#1^6\&,\Big(c \#1+d x \#1+2 \text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]-\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]+\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]\#1-\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]\#1\Big]\#1\Big)\Big/\left(b+4 a \#1-2 b \#1^2+b \#1^4\right)\&\Big]$$

Problem 178: Result is not expressed in closed-form.

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

Optimal (type 3, 286 leaves, 14 steps):

$$\frac{2\, b^{1/3}\, \text{ArcTan}\left[\frac{(-1)^{5/6}\left((-1)^{1/6} b^{1/3}+i\, a^{1/3}\, \text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{-(-1)^{2/3} a^{2/3}-b^{2/3}}}\right]}{3\, a\, \sqrt{-(-1)^{2/3} a^{2/3}-b^{2/3}}\, d}+\frac{2\, b^{1/3}\, \text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{5/6} b^{1/3}+i\, a^{1/3}\, \text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3} a^{2/3}-b^{2/3}}}\right]}{3\, a\, \sqrt{(-1)^{1/3} a^{2/3}-b^{2/3}}\, d}-\frac{\text{ArcTanh}[\text{Cosh}[c+d\,x]]}{a\, d}+\frac{2\, b^{1/3}\, \text{ArcTanh}\left[\frac{b^{1/3}-a^{1/3}\, \text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}+b^{2/3}}}\right]}{3\, a\, \sqrt{a^{2/3}+b^{2/3}}\, d}$$

Result (type 7, 307 leaves):

$$-\frac{1}{6\, a\, d}\left(6\, \text{Log}\left[\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]\right]-6\, \text{Log}\left[\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]\right]+b\, \text{RootSum}\left[-b+3\, b\, \#1^2+8\, a\, \#1^3-3\, b\, \#1^4+b\, \#1^6\, \&,\ \frac{1}{b\, \#1+4\, a\, \#1^2-2\, b\, \#1^3+b\, \#1^5}\left(c+d\,x+2\, \text{Log}\left[-\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]\#1\right]-2\, c\, \#1^2-2\, d\, x\, \#1^2-4\, \text{Log}\left[-\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]\#1\right]\#1^2+c\, \#1^4+d\, x\, \#1^4+2\, \text{Log}\left[-\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]\#1\right]\#1^4\right)\&\right]\right)$$

Problem 179: Result is not expressed in closed-form.

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

Optimal (type 3, 304 leaves, 15 steps):

$$-\frac{2\, b^{2/3}\, \text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{1/6} b^{1/3}+i\, a^{1/3}\, \text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3} a^{2/3}-(-1)^{2/3} b^{2/3}}}\right]}{3\, a^{4/3}\, \sqrt{(-1)^{1/3} a^{2/3}-(-1)^{2/3} b^{2/3}}\, d}+\frac{2\,(-1)^{1/3} b^{2/3}\, \text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{5/6} b^{1/3}+i\, a^{1/3}\, \text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3} a^{2/3}-b^{2/3}}}\right]}{3\, a^{4/3}\, \sqrt{(-1)^{1/3} a^{2/3}-b^{2/3}}\, d}-\frac{2\, b^{2/3}\, \text{ArcTanh}\left[\frac{b^{1/3}-a^{1/3}\, \text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}+b^{2/3}}}\right]}{3\, a^{4/3}\, \sqrt{a^{2/3}+b^{2/3}}\, d}-\frac{\text{Coth}[c+d\,x]}{a\, d}$$

Result (type 7, 230 leaves):

$$-\frac{1}{6\,a\,d}\left(3\,\text{Coth}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,b\,\text{RootSum}\left[-b+3\,b\,\#1^2+8\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\,\left(-c-d\,x-2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\right]+c\,\#1^2+d\,x\,\#1^2+2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\right]\,\#1^2\right)\Big/\left(b+4\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\right]+3\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

Problem 180: Result is not expressed in closed-form.

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

Optimal (type 3, 322 leaves, 15 steps):

$$\frac{2\,(-1)^{2/3}\,b\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{1/6}\,b^{1/3}+i\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,a^{5/3}\,\sqrt{(-1)^{1/3}\,a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,d}+\frac{2\,(-1)^{2/3}\,b\,\text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{5/6}\,b^{1/3}+i\,a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}}\right]}{3\,a^{5/3}\,\sqrt{(-1)^{1/3}\,a^{2/3}-b^{2/3}}\,d}+\frac{\text{ArcTanh}[\text{Cosh}[c+d\,x]]}{2\,a\,d}+\frac{2\,b\,\text{ArcTanh}\left[\frac{b^{1/3}-a^{1/3}\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}+b^{2/3}}}\right]}{3\,a^{5/3}\,\sqrt{a^{2/3}+b^{2/3}}\,d}-\frac{\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]}{2\,a\,d}$$

Result (type 7, 191 leaves):

$$-\frac{1}{24\,a\,d}\left(16\,b\,\text{RootSum}\left[-b+3\,b\,\#1^2+8\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\,\left(c\,\#1+d\,x\,\#1+2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\right]\,\#1\right)\Big/\left(b+4\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\right]+3\left(\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^2-4\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+4\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)$$

Problem 181: Result is not expressed in closed-form.

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

Optimal (type 3, 317 leaves, 16 steps):

$$-\frac{2 b^{4/3} \text{ArcTan}\left[\frac{(-1)^{5/6}\left((-1)^{1/6} b^{1/3}+i a^{1/3} \text{Tanh}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{-(-1)^{2/3} a^{2/3}-b^{2/3}}}\right]}{3 a^2 \sqrt{-(-1)^{2/3} a^{2/3}-b^{2/3}}\, d}-\frac{2 b^{4/3} \text{ArcTan}\left[\frac{(-1)^{1/6}\left((-1)^{5/6} b^{1/3}+i a^{1/3} \text{Tanh}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{(-1)^{1/3} a^{2/3}-b^{2/3}}}\right]}{3 a^2 \sqrt{(-1)^{1/3} a^{2/3}-b^{2/3}}\, d}+\frac{b \text{ArcTanh}[\text{Cosh}[c+d x]]}{a^2 d}-\frac{2 b^{4/3} \text{ArcTanh}\left[\frac{b^{1/3}-a^{1/3} \text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^{2/3}+b^{2/3}}}\right]}{3 a^2 \sqrt{a^{2/3}+b^{2/3}}\, d}+\frac{\text{Coth}[c+d x]}{a d}-\frac{\text{Coth}[c+d x]^3}{3 a d}$$

Result (type 7, 450 leaves):

$$\frac{\text{Coth}\left[\frac{1}{2}(c+d x)\right]}{3 a d}-\frac{\text{Coth}\left[\frac{1}{2}(c+d x)\right] \text{Csch}\left[\frac{1}{2}(c+d x)\right]^2}{24 a d}+\frac{b \text{Log}\left[\text{Cosh}\left[\frac{1}{2}(c+d x)\right]\right]}{a^2 d}-\frac{b \text{Log}\left[\text{Sinh}\left[\frac{1}{2}(c+d x)\right]\right]}{a^2 d}+\frac{1}{6 a^2 d}\text{RootSum}\Big[-b+3 b \#1^2+8 a \#1^3-3 b \#1^4+b \#1^6\&,\Big(b^2 c+b^2 d x+2 b^2 \text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}(c+d x)\right]-\text{Sinh}\left[\frac{1}{2}(c+d x)\right]+\text{Cosh}\left[\frac{1}{2}(c+d x)\right]\#1-\text{Sinh}\left[\frac{1}{2}(c+d x)\right]\#1\Big]-2 b^2 c \#1^2-2 b^2 d x \#1^2-4 b^2 \text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}(c+d x)\right]-\text{Sinh}\left[\frac{1}{2}(c+d x)\right]+\text{Cosh}\left[\frac{1}{2}(c+d x)\right]\#1-\text{Sinh}\left[\frac{1}{2}(c+d x)\right]\#1\Big]\#1^2+b^2 c \#1^4+b^2 d x \#1^4+2 b^2 \text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}(c+d x)\right]-\text{Sinh}\left[\frac{1}{2}(c+d x)\right]+\text{Cosh}\left[\frac{1}{2}(c+d x)\right]\#1-\text{Sinh}\left[\frac{1}{2}(c+d x)\right]\#1\Big]\#1^4\Big)\Big/\left(b \#1+4 a \#1^2-2 b \#1^3+b \#1^5\right)\&\Big]+\frac{\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{3 a d}+\frac{\text{Sech}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{24 a d}$$

Problem 191: Result more than twice size of optimal antiderivative.

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

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

$$\frac{a\,\text{ArcTanh}[\text{Cosh}[c+d\,x]]}{2\,d}+\frac{b\,\text{Cosh}[c+d\,x]}{d}-\frac{a\,\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]}{2\,d}$$

Result (type 3, 101 leaves):

$$\frac{b\,\text{Cosh}[c]\,\text{Cosh}[d\,x]}{d}-\frac{a\,\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{8\,d}+\frac{a\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}-\frac{a\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}-\frac{a\,\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{8\,d}+\frac{b\,\text{Sinh}[c]\,\text{Sinh}[d\,x]}{d}$$

Problem 193: Result more than twice size of optimal antiderivative.

$$\int \text{Csch}[c+d\,x]^5\,\left(a+b\,\text{Sinh}[c+d\,x]^4\right)\,dx$$

Optimal (type 3, 64 leaves, 4 steps):

$$-\frac{(3\,a+8\,b)\,\text{ArcTanh}[\text{Cosh}[c+d\,x]]}{8\,d}+\frac{3\,a\,\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]}{8\,d}-\frac{a\,\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]^3}{4\,d}$$

Result (type 3, 158 leaves):

$$\frac{3\,a\,\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{32\,d}-\frac{a\,\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^4}{64\,d}-\frac{b\,\text{Log}\left[\text{Cosh}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}-\frac{3\,a\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{b\,\text{Log}\left[\text{Sinh}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{3\,a\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{3\,a\,\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{32\,d}+\frac{a\,\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^4}{64\,d}$$

Problem 195: Result more than twice size of optimal antiderivative.

$$\int \text{Csch}[c+d\,x]^7\,\left(a+b\,\text{Sinh}[c+d\,x]^4\right)\,dx$$

Optimal (type 3, 92 leaves, 5 steps):

$$\frac{(5\,a+8\,b)\,\text{ArcTanh}[\text{Cosh}[c+d\,x]]}{16\,d}-\frac{(5\,a+8\,b)\,\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]}{16\,d}+\frac{5\,a\,\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]^3}{24\,d}-\frac{a\,\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]^5}{6\,d}$$

Result (type 3, 237 leaves):

$$-\frac{5\,a\,\text{Csch}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{64\,d}-\frac{b\,\text{Csch}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{8\,d}+\frac{a\,\text{Csch}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4}{64\,d}-\frac{a\,\text{Csch}\left[\frac{1}{2}\left(c+d\,x\right)\right]^6}{384\,d}+\frac{5\,a\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]}{16\,d}+\frac{b\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]}{2\,d}-\frac{5\,a\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]}{16\,d}-\frac{b\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]}{2\,d}-\frac{5\,a\,\text{Sech}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{64\,d}-\frac{b\,\text{Sech}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{8\,d}-\frac{a\,\text{Sech}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4}{64\,d}-\frac{a\,\text{Sech}\left[\frac{1}{2}\left(c+d\,x\right)\right]^6}{384\,d}$$

Problem 204: Result more than twice size of optimal antiderivative.

$$\int \text{Csch}[c+d\,x]^5\left(a+b\,\text{Sinh}[c+d\,x]^4\right)^2\,dx$$

Optimal (type 3, 101 leaves, 6 steps):

$$-\frac{a\left(3\,a+16\,b\right)\text{ArcTanh}[\text{Cosh}[c+d\,x]]}{8\,d}-\frac{b^2\,\text{Cosh}[c+d\,x]}{d}+\frac{b^2\,\text{Cosh}[c+d\,x]^3}{3\,d}+\frac{3\,a^2\,\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]}{8\,d}-\frac{a^2\,\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]^3}{4\,d}$$

Result (type 3, 207 leaves):

$$-\frac{3\,b^2\,\text{Cosh}[c+d\,x]}{4\,d}+\frac{b^2\,\text{Cosh}\left[3\left(c+d\,x\right)\right]}{12\,d}+\frac{3\,a^2\,\text{Csch}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{32\,d}-\frac{a^2\,\text{Csch}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4}{64\,d}-\frac{2\,a\,b\,\text{Log}\left[\text{Cosh}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}-\frac{3\,a^2\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]}{8\,d}+\frac{2\,a\,b\,\text{Log}\left[\text{Sinh}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{3\,a^2\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right]}{8\,d}+\frac{3\,a^2\,\text{Sech}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{32\,d}+\frac{a^2\,\text{Sech}\left[\frac{1}{2}\left(c+d\,x\right)\right]^4}{64\,d}$$

Problem 206: Result more than twice size of optimal antiderivative.

$$\int \text{Csch}[c+d\,x]^7\left(a+b\,\text{Sinh}[c+d\,x]^4\right)^2\,dx$$

Optimal (type 3, 111 leaves, 6 steps):

$$\frac{a\left(5\,a+16\,b\right)\text{ArcTanh}[\text{Cosh}[c+d\,x]]}{16\,d}+\frac{b^2\,\text{Cosh}[c+d\,x]}{d}-\frac{a\left(5\,a+16\,b\right)\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]}{16\,d}+\frac{5\,a^2\,\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]^3}{24\,d}-\frac{a^2\,\text{Coth}[c+d\,x]\,\text{Csch}[c+d\,x]^5}{6\,d}$$

Result (type 3, 278 leaves):

$$\frac{b^2\,\text{Cosh}[c]\,\text{Cosh}[d\,x]}{d}-\frac{5\,a^2\,\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{64\,d}-\frac{a\,b\,\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{4\,d}+\frac{a^2\,\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^4}{64\,d}-\frac{a^2\,\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^6}{384\,d}+\frac{5\,a^2\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{16\,d}+\frac{a\,b\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{d}-\frac{5\,a^2\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{16\,d}-\frac{a\,b\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{d}-\frac{5\,a^2\,\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{64\,d}-\frac{a\,b\,\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{4\,d}-\frac{a^2\,\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^4}{64\,d}-\frac{a^2\,\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^6}{384\,d}+\frac{b^2\,\text{Sinh}[c]\,\text{Sinh}[d\,x]}{d}$$

Problem 225: Result more than twice size of optimal antiderivative.

$$\int \text{Csch}[c+d\,x]^{14}\,\left(a+b\,\text{Sinh}[c+d\,x]^4\right)^3\,dx$$

Optimal (type 3, 144 leaves, 3 steps):

$$-\frac{(a+b)^3\,\text{Coth}[c+d\,x]}{d}+\frac{2\,a\,(a+b)^2\,\text{Coth}[c+d\,x]^3}{d}-\frac{3\,a\,(a+b)\,(5\,a+b)\,\text{Coth}[c+d\,x]^5}{5\,d}+\frac{4\,a^2\,(5\,a+3\,b)\,\text{Coth}[c+d\,x]^7}{7\,d}-\frac{a^2\,(5\,a+b)\,\text{Coth}[c+d\,x]^9}{3\,d}+\frac{6\,a^3\,\text{Coth}[c+d\,x]^{11}}{11\,d}-\frac{a^3\,\text{Coth}[c+d\,x]^{13}}{13\,d}$$

Result (type 3, 386 leaves):

$$\frac{1}{61\,501\,440\,d}\left(-8\,785\,920\,a^3\,\text{Cosh}[c+d\,x]-9\,884\,160\,a^2\,b\,\text{Cosh}[c+d\,x]-7\,207\,200\,a\,b^2\,\text{Cosh}[c+d\,x]-1\,981\,980\,b^3\,\text{Cosh}[c+d\,x]+6\,589\,440\,a^3\,\text{Cosh}[3\,(c+d\,x)]+18\,944\,640\,a^2\,b\,\text{Cosh}[3\,(c+d\,x)]+15\,495\,480\,a\,b^2\,\text{Cosh}[3\,(c+d\,x)]+4\,459\,455\,b^3\,\text{Cosh}[3\,(c+d\,x)]-3\,660\,800\,a^3\,\text{Cosh}[5\,(c+d\,x)]-13\,087\,360\,a^2\,b\,\text{Cosh}[5\,(c+d\,x)]-13\,093\,080\,a\,b^2\,\text{Cosh}[5\,(c+d\,x)]-4\,129\,125\,b^3\,\text{Cosh}[5\,(c+d\,x)]+1\,464\,320\,a^3\,\text{Cosh}[7\,(c+d\,x)]+5\,234\,944\,a^2\,b\,\text{Cosh}[7\,(c+d\,x)]+6\,390\,384\,a\,b^2\,\text{Cosh}[7\,(c+d\,x)]+2\,312\,310\,b^3\,\text{Cosh}[7\,(c+d\,x)]-399\,360\,a^3\,\text{Cosh}[9\,(c+d\,x)]-1\,427\,712\,a^2\,b\,\text{Cosh}[9\,(c+d\,x)]-1\,873\,872\,a\,b^2\,\text{Cosh}[9\,(c+d\,x)]-810\,810\,b^3\,\text{Cosh}[9\,(c+d\,x)]+66\,560\,a^3\,\text{Cosh}[11\,(c+d\,x)]+237\,952\,a^2\,b\,\text{Cosh}[11\,(c+d\,x)]+312\,312\,a\,b^2\,\text{Cosh}[11\,(c+d\,x)]+165\,165\,b^3\,\text{Cosh}[11\,(c+d\,x)]-5120\,a^3\,\text{Cosh}[13\,(c+d\,x)]-18\,304\,a^2\,b\,\text{Cosh}[13\,(c+d\,x)]-24\,024\,a\,b^2\,\text{Cosh}[13\,(c+d\,x)]-15\,015\,b^3\,\text{Cosh}[13\,(c+d\,x)]\right)\text{Csch}[c+d\,x]^{13}$$

Problem 226: Result more than twice size of optimal antiderivative.

$$\int \text{Csch}[c+d\,x]^{16}\,\left(a+b\,\text{Sinh}[c+d\,x]^4\right)^3\,dx$$

Optimal (type 3, 182 leaves, 3 steps):

$$\frac{(a+b)^3 \text{Coth}[c+d x]}{d}-\frac{(a+b)^2 (7 a+b) \text{Coth}[c+d x]^3}{3 d}+\frac{3 a (a+b) (7 a+3 b) \text{Coth}[c+d x]^5}{5 d}-\frac{a \left(35 a^2+30 a b+3 b^2\right) \text{Coth}[c+d x]^7}{7 d}+\frac{5 a^2 (7 a+3 b) \text{Coth}[c+d x]^9}{9 d}-\frac{3 a^2 (7 a+b) \text{Coth}[c+d x]^{11}}{11 d}+\frac{7 a^3 \text{Coth}[c+d x]^{13}}{13 d}-\frac{a^3 \text{Coth}[c+d x]^{15}}{15 d}$$

Result (type 3, 440 leaves):

$$\frac{1}{369008640 d}\left(-46126080 a^3 \text{Cosh}[c+d x]-51891840 a^2 b \text{Cosh}[c+d x]-37837800 a b^2 \text{Cosh}[c+d x]-10405395 b^3 \text{Cosh}[c+d x]+35875840 a^3 \text{Cosh}[3 (c+d x)]+101861760 a^2 b \text{Cosh}[3 (c+d x)]+83243160 a b^2 \text{Cosh}[3 (c+d x)]+23948925 b^3 \text{Cosh}[3 (c+d x)]-21525504 a^3 \text{Cosh}[5 (c+d x)]-74954880 a^2 b \text{Cosh}[5 (c+d x)]-74162088 a b^2 \text{Cosh}[5 (c+d x)]-23288265 b^3 \text{Cosh}[5 (c+d x)]+9784320 a^3 \text{Cosh}[7 (c+d x)]+34070400 a^2 b \text{Cosh}[7 (c+d x)]+39999960 a b^2 \text{Cosh}[7 (c+d x)]+14189175 b^3 \text{Cosh}[7 (c+d x)]-3261440 a^3 \text{Cosh}[9 (c+d x)]-11356800 a^2 b \text{Cosh}[9 (c+d x)]-14054040 a b^2 \text{Cosh}[9 (c+d x)]-5720715 b^3 \text{Cosh}[9 (c+d x)]+752640 a^3 \text{Cosh}[11 (c+d x)]+2620800 a^2 b \text{Cosh}[11 (c+d x)]+3243240 a b^2 \text{Cosh}[11 (c+d x)]+1486485 b^3 \text{Cosh}[11 (c+d x)]-107520 a^3 \text{Cosh}[13 (c+d x)]-374400 a^2 b \text{Cosh}[13 (c+d x)]-463320 a b^2 \text{Cosh}[13 (c+d x)]-225225 b^3 \text{Cosh}[13 (c+d x)]+7168 a^3 \text{Cosh}[15 (c+d x)]+24960 a^2 b \text{Cosh}[15 (c+d x)]+30888 a b^2 \text{Cosh}[15 (c+d x)]+15015 b^3 \text{Cosh}[15 (c+d x)]\right) \text{Csch}[c+d x]^{15}$$

Problem 227: Result more than twice size of optimal antiderivative.

$$\int \text{Csch}[c+d x]^{18} \left(a+b \text{Sinh}[c+d x]^4\right)^3 \, dx$$

Optimal (type 3, 221 leaves, 3 steps):

$$-\frac{(a+b)^3 \text{Coth}[c+d x]}{d}+\frac{2 (a+b)^2 (4 a+b) \text{Coth}[c+d x]^3}{3 d}-\frac{(a+b) \left(28 a^2+17 a b+b^2\right) \text{Coth}[c+d x]^5}{5 d}+\frac{4 a \left(14 a^2+15 a b+3 b^2\right) \text{Coth}[c+d x]^7}{7 d}-\frac{a \left(70 a^2+45 a b+3 b^2\right) \text{Coth}[c+d x]^9}{9 d}+\frac{2 a^2 (28 a+9 b) \text{Coth}[c+d x]^{11}}{11 d}-\frac{a^2 (28 a+3 b) \text{Coth}[c+d x]^{13}}{13 d}+\frac{8 a^3 \text{Coth}[c+d x]^{15}}{15 d}-\frac{a^3 \text{Coth}[c+d x]^{17}}{17 d}$$

Result (type 3, 494 leaves):

$$\frac{1}{6273146880\,d}\left(-697016320\,a^3\,\text{Cosh}[c+d\,x]-784143360\,a^2\,b\,\text{Cosh}[c+d\,x]-571771200\,a\,b^2\,\text{Cosh}[c+d\,x]-157237080\,b^3\,\text{Cosh}[c+d\,x]+557613056\,a^3\,\text{Cosh}[3\,(c+d\,x)]+1568286720\,a^2\,b\,\text{Cosh}[3\,(c+d\,x)]+1280767488\,a\,b^2\,\text{Cosh}[3\,(c+d\,x)]+368384016\,b^3\,\text{Cosh}[3\,(c+d\,x)]-354844672\,a^3\,\text{Cosh}[5\,(c+d\,x)]-1211857920\,a^2\,b\,\text{Cosh}[5\,(c+d\,x)]-1189284096\,a\,b^2\,\text{Cosh}[5\,(c+d\,x)]-372263892\,b^3\,\text{Cosh}[5\,(c+d\,x)]+177422336\,a^3\,\text{Cosh}[7\,(c+d\,x)]+605928960\,a^2\,b\,\text{Cosh}[7\,(c+d\,x)]+692659968\,a\,b^2\,\text{Cosh}[7\,(c+d\,x)]+242288046\,b^3\,\text{Cosh}[7\,(c+d\,x)]-68239360\,a^3\,\text{Cosh}[9\,(c+d\,x)]-233049600\,a^2\,b\,\text{Cosh}[9\,(c+d\,x)]-277717440\,a\,b^2\,\text{Cosh}[9\,(c+d\,x)]-108738630\,b^3\,\text{Cosh}[9\,(c+d\,x)]+19496960\,a^3\,\text{Cosh}[11\,(c+d\,x)]+66585600\,a^2\,b\,\text{Cosh}[11\,(c+d\,x)]+79347840\,a\,b^2\,\text{Cosh}[11\,(c+d\,x)]+33693660\,b^3\,\text{Cosh}[11\,(c+d\,x)]-3899392\,a^3\,\text{Cosh}[13\,(c+d\,x)]-13317120\,a^2\,b\,\text{Cosh}[13\,(c+d\,x)]-15869568\,a\,b^2\,\text{Cosh}[13\,(c+d\,x)]-6942936\,b^3\,\text{Cosh}[13\,(c+d\,x)]+487424\,a^3\,\text{Cosh}[15\,(c+d\,x)]+1664640\,a^2\,b\,\text{Cosh}[15\,(c+d\,x)]+1983696\,a\,b^2\,\text{Cosh}[15\,(c+d\,x)]+867867\,b^3\,\text{Cosh}[15\,(c+d\,x)]-28672\,a^3\,\text{Cosh}[17\,(c+d\,x)]-97920\,a^2\,b\,\text{Cosh}[17\,(c+d\,x)]-116688\,a\,b^2\,\text{Cosh}[17\,(c+d\,x)]-51051\,b^3\,\text{Cosh}[17\,(c+d\,x)]\right)\text{Csch}[c+d\,x]^{17}$$

Problem 228: Result more than twice size of optimal antiderivative.

$$\int \text{Csch}[c+d\,x]^{20}\left(a+b\,\text{Sinh}[c+d\,x]^4\right)^3\,dx$$

Optimal (type 3, 248 leaves, 3 steps):

$$\frac{(a+b)^3\,\text{Coth}[c+d\,x]}{d}-\frac{(a+b)^2\,(3\,a+b)\,\text{Coth}[c+d\,x]^3}{d}+\frac{3\,(a+b)\,\left(12\,a^2+9\,a\,b+b^2\right)\,\text{Coth}[c+d\,x]^5}{5\,d}-\frac{\left(84\,a^3+105\,a^2\,b+30\,a\,b^2+b^3\right)\,\text{Coth}[c+d\,x]^7}{7\,d}+\frac{a\,\left(42\,a^2+35\,a\,b+5\,b^2\right)\,\text{Coth}[c+d\,x]^9}{3\,d}-\frac{3\,a\,\left(42\,a^2+21\,a\,b+b^2\right)\,\text{Coth}[c+d\,x]^{11}}{11\,d}+\frac{21\,a^2\,(4\,a+b)\,\text{Coth}[c+d\,x]^{13}}{13\,d}-\frac{a^2\,(12\,a+b)\,\text{Coth}[c+d\,x]^{15}}{5\,d}+\frac{9\,a^3\,\text{Coth}[c+d\,x]^{17}}{17\,d}-\frac{a^3\,\text{Coth}[c+d\,x]^{19}}{19\,d}$$

Result (type 3, 548 leaves):

$$\frac{1}{79\,459\,860\,480\,d}\Big(-7\,945\,986\,048\,a^3\,\text{Cosh}[c+d\,x]-8\,939\,234\,304\,a^2\,b\,\text{Cosh}[c+d\,x]-6\,518\,191\,680\,a\,b^2\,\text{Cosh}[c+d\,x]-1\,792\,502\,712\,b^3\,\text{Cosh}[c+d\,x]+6\,501\,261\,312\,a^3\,\text{Cosh}[3\,(c+d\,x)]+18\,149\,354\,496\,a^2\,b\,\text{Cosh}[3\,(c+d\,x)]+14\,814\,072\,000\,a\,b^2\,\text{Cosh}[3\,(c+d\,x)]+4\,260\,103\,848\,b^3\,\text{Cosh}[3\,(c+d\,x)]-4\,334\,174\,208\,a^3\,\text{Cosh}[5\,(c+d\,x)]-14\,582\,690\,304\,a^2\,b\,\text{Cosh}[5\,(c+d\,x)]-14\,221\,509\,120\,a\,b^2\,\text{Cosh}[5\,(c+d\,x)]-4\,440\,518\,082\,b^3\,\text{Cosh}[5\,(c+d\,x)]+2\,333\,786\,112\,a^3\,\text{Cosh}[7\,(c+d\,x)]+7\,852\,217\,856\,a^2\,b\,\text{Cosh}[7\,(c+d\,x)]+8\,803\,791\,360\,a\,b^2\,\text{Cosh}[7\,(c+d\,x)]+3\,047\,642\,598\,b^3\,\text{Cosh}[7\,(c+d\,x)]-1\,000\,194\,048\,a^3\,\text{Cosh}[9\,(c+d\,x)]-3\,365\,236\,224\,a^2\,b\,\text{Cosh}[9\,(c+d\,x)]-3\,906\,077\,760\,a\,b^2\,\text{Cosh}[9\,(c+d\,x)]-1\,489\,040\,982\,b^3\,\text{Cosh}[9\,(c+d\,x)]+333\,398\,016\,a^3\,\text{Cosh}[11\,(c+d\,x)]+1\,121\,745\,408\,a^2\,b\,\text{Cosh}[11\,(c+d\,x)]+1\,302\,025\,920\,a\,b^2\,\text{Cosh}[11\,(c+d\,x)]+527\,386\,002\,b^3\,\text{Cosh}[11\,(c+d\,x)]-83\,349\,504\,a^3\,\text{Cosh}[13\,(c+d\,x)]-280\,436\,352\,a^2\,b\,\text{Cosh}[13\,(c+d\,x)]-325\,506\,480\,a\,b^2\,\text{Cosh}[13\,(c+d\,x)]-134\,271\,423\,b^3\,\text{Cosh}[13\,(c+d\,x)]+14\,708\,736\,a^3\,\text{Cosh}[15\,(c+d\,x)]+49\,488\,768\,a^2\,b\,\text{Cosh}[15\,(c+d\,x)]+57\,442\,320\,a\,b^2\,\text{Cosh}[15\,(c+d\,x)]+23\,694\,957\,b^3\,\text{Cosh}[15\,(c+d\,x)]-1\,634\,304\,a^3\,\text{Cosh}[17\,(c+d\,x)]-5\,498\,752\,a^2\,b\,\text{Cosh}[17\,(c+d\,x)]-6\,382\,480\,a\,b^2\,\text{Cosh}[17\,(c+d\,x)]-2\,632\,773\,b^3\,\text{Cosh}[17\,(c+d\,x)]+86\,016\,a^3\,\text{Cosh}[19\,(c+d\,x)]+289\,408\,a^2\,b\,\text{Cosh}[19\,(c+d\,x)]+335\,920\,a\,b^2\,\text{Cosh}[19\,(c+d\,x)]+138\,567\,b^3\,\text{Cosh}[19\,(c+d\,x)]\Big)\,\text{Csch}[c+d\,x]^{19}$$

Problem 229: Result is not expressed in closed-form.

$$\int \frac{\text{Sinh}[c+d\,x]^7}{a-b\,\text{Sinh}[c+d\,x]^4}\,dx$$

Optimal (type 3, 148 leaves, 6 steps):

$$-\frac{a\,\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}-\sqrt{b}}\;b^{7/4}\,d}+\frac{a\,\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}+\sqrt{b}}\;b^{7/4}\,d}+\frac{\text{Cosh}[c+d\,x]}{b\,d}-\frac{\text{Cosh}[c+d\,x]^3}{3\,b\,d}$$

Result (type 7, 390 leaves):

$$\frac{1}{24\,b\,d}\Big(18\,\text{Cosh}[c+d\,x]-2\,\text{Cosh}[3\,(c+d\,x)]-3\,a\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$
$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(-c-d\,x-2\,\text{Log}\Big[$$
$$-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]+$$
$$3\,c\,\#1^2+3\,d\,x\,\#1^2+6\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$
$$\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^2-3\,c\,\#1^4-3\,d\,x\,\#1^4-$$
$$6\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^4+c\,\#1^6+d\,x\,\#1^6+2\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^6\Big)\,\&\Big]\Big)$$

Problem 230: Result is not expressed in closed-form.

$$\int\frac{\text{Sinh}[c+d\,x]^5}{a-b\,\text{Sinh}[c+d\,x]^4}\,dx$$

Optimal (type 3, 139 leaves, 6 steps):

$$\frac{\sqrt{a}\,\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}-\sqrt{b}}\,b^{5/4}\,d}+\frac{\sqrt{a}\,\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}+\sqrt{b}}\,b^{5/4}\,d}-\frac{\text{Cosh}[c+d\,x]}{b\,d}$$

Result (type 7, 235 leaves):

$$-\frac{1}{2\,b\,d}\Big(2\,\text{Cosh}[c+d\,x]+a\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\Big(-c\,\#1-d\,x\,\#1-2\,\text{Log}\Big[$$
$$-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]$$
$$\#1+c\,\#1^3+d\,x\,\#1^3+2\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]$$
$$\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^3\Big)\Big/\left(-b-8\,a\,\#1^2+3\,b\,\#1^2-3\,b\,\#1^4+b\,\#1^6\right)\,\&\Big]\Big)$$

Problem 231: Result is not expressed in closed-form.

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

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

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

Result (type 7, 365 leaves):

$$-\frac{1}{8\,d}\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$
$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(-c-d\,x-2\,\text{Log}\Big[$$
$$-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]+$$
$$3\,c\,\#1^2+3\,d\,x\,\#1^2+6\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$
$$\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^2-3\,c\,\#1^4-3\,d\,x\,\#1^4-$$
$$6\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]$$
$$\#1^4+c\,\#1^6+d\,x\,\#1^6+2\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$
$$\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^6\Big)\,\&\Big]$$

Problem 232: Result is not expressed in closed-form.

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

Optimal (type 3, 125 leaves, 4 steps):

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

Result (type 7, 221 leaves):

$$-\frac{1}{2\,d}\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$
$$\Big(-c\,\#1-d\,x\,\#1-2\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$
$$\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1+c\,\#1^3+d\,x\,\#1^3+$$
$$2\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]$$
$$\#1^3\Big)\Big/\left(-b-8\,a\,\#1^2+3\,b\,\#1^2-3\,b\,\#1^4+b\,\#1^6\right)\,\&\Big]$$

Problem 233: Result is not expressed in closed-form.

$$\int \frac{\text{Csch}[c+d x]}{a-b \,\text{Sinh}[c+d x]^4}\, dx$$

Optimal (type 3, 136 leaves, 7 steps):

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

Result (type 7, 397 leaves):

$$-\frac{1}{8 a d}\Big(8 \,\text{Log}\Big[\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]\Big]-8 \,\text{Log}\Big[\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]\Big]+$$
$$b \,\text{RootSum}\Big[b-4 b \,\#1^2-16 a \,\#1^4+6 b \,\#1^4-4 b \,\#1^6+b \,\#1^8\,\&,$$
$$\frac{1}{-b \,\#1-8 a \,\#1^3+3 b \,\#1^3-3 b \,\#1^5+b \,\#1^7}\Big(-c-d x-2 \,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]-$$
$$\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]+\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]\#1-\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]\#1\Big]+$$
$$3 c \,\#1^2+3 d x \,\#1^2+6 \,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]-\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]+$$
$$\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]\#1-\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]\#1\Big]\#1^2-3 c \,\#1^4-3 d x \,\#1^4-$$
$$6 \,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]-\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]+\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]\#1-$$
$$\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]\#1\Big]\#1^4+c \,\#1^6+d x \,\#1^6+2 \,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]-$$
$$\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]+\text{Cosh}\Big[\frac{1}{2}(c+d x)\Big]\#1-\text{Sinh}\Big[\frac{1}{2}(c+d x)\Big]\#1\Big]\#1^6\Big)\,\&\Big]\Big)$$

Problem 234: Result is not expressed in closed-form.

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

Optimal (type 3, 184 leaves, 7 steps):

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

Result (type 7, 278 leaves):

$$-\frac{1}{8\,a\,d}\left(\text{Csch}\left[\frac{1}{2}\,(c+d\,x)\right]^2-4\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+4\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+4\,b\,\text{RootSum}\Big[b-4\,b\,\sharp1^2-16\,a\,\sharp1^4+6\,b\,\sharp1^4-4\,b\,\sharp1^6+b\,\sharp1^8\,\&,\ \Big(-c\,\sharp1-d\,x\,\sharp1-2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\sharp1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\sharp1\right]\sharp1+c\,\sharp1^3+d\,x\,\sharp1^3+2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\sharp1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\sharp1\right]\sharp1^3\Big)\Big/\left(-b-8\,a\,\sharp1^2+3\,b\,\sharp1^2-3\,b\,\sharp1^4+b\,\sharp1^6\right)\,\&\Big]+\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

Problem 241: Result is not expressed in closed-form.

$$\int\frac{\text{Sinh}[c+d\,x]^9}{\left(a-b\,\text{Sinh}[c+d\,x]^4\right)^2}\,dx$$

Optimal (type 3, 235 leaves, 7 steps):

$$-\frac{\sqrt{a}\,\left(5\,\sqrt{a}-6\,\sqrt{b}\right)\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8\,\left(\sqrt{a}-\sqrt{b}\right)^{3/2}\,b^{9/4}\,d}-\frac{\sqrt{a}\,\left(5\,\sqrt{a}+6\,\sqrt{b}\right)\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8\,\left(\sqrt{a}+\sqrt{b}\right)^{3/2}\,b^{9/4}\,d}+\frac{\text{Cosh}[c+d\,x]}{b^2\,d}+\frac{a\,\text{Cosh}[c+d\,x]\,\left(a+b-b\,\text{Cosh}[c+d\,x]^2\right)}{4\,(a-b)\,b^2\,d\,\left(a-b+2\,b\,\text{Cosh}[c+d\,x]^2-b\,\text{Cosh}[c+d\,x]^4\right)}$$

Result (type 7, 615 leaves):

$$\frac{1}{32\,b^2\,d}\left(32\,\mathrm{Cosh}[c+d\,x]+\frac{32\,a\,\mathrm{Cosh}[c+d\,x]\,\left(2\,a+b-b\,\mathrm{Cosh}\left[2\,\left(c+d\,x\right)\right]\right)}{\left(a-b\right)\,\left(8\,a-3\,b+4\,b\,\mathrm{Cosh}\left[2\,\left(c+d\,x\right)\right]-b\,\mathrm{Cosh}\left[4\,\left(c+d\,x\right)\right]\right)}+\frac{1}{a-b}\,a\,\mathrm{RootSum}\Big[\right.$$
$$b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}$$
$$\left(-b\,c-b\,d\,x-2\,b\,\mathrm{Log}\Big[-\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]-\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]+\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1-\right.$$
$$\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1\Big]-20\,a\,c\,\#1^2+27\,b\,c\,\#1^2-20\,a\,d\,x\,\#1^2+27\,b\,d\,x\,\#1^2-40\,a\,\mathrm{Log}\Big[$$
$$-\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]-\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]+\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1-\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1\Big]$$
$$\#1^2+54\,b\,\mathrm{Log}\Big[-\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]-\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]+\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1-$$
$$\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1\Big]\,\#1^2+20\,a\,c\,\#1^4-27\,b\,c\,\#1^4+20\,a\,d\,x\,\#1^4-27\,b\,d\,x\,\#1^4+40\,a\,\mathrm{Log}\Big[$$
$$-\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]-\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]+\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1-\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1\Big]$$
$$\#1^4-54\,b\,\mathrm{Log}\Big[-\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]-\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]+\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1-$$
$$\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1\Big]\,\#1^4+b\,c\,\#1^6+b\,d\,x\,\#1^6+2\,b\,\mathrm{Log}\Big[-\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]-$$
$$\left.\left.\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]+\mathrm{Cosh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1-\mathrm{Sinh}\Big[\frac{1}{2}\,\left(c+d\,x\right)\Big]\,\#1\Big]\,\#1^6\right)\,\&\Big]\right)$$

Problem 242: Result is not expressed in closed-form.

$$\int\frac{\mathrm{Sinh}[c+d\,x]^7}{\left(a-b\,\mathrm{Sinh}[c+d\,x]^4\right)^2}\,dx$$

Optimal (type 3, 210 leaves, 5 steps):

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

Result (type 7, 737 leaves):

$$-\frac{1}{32\,(a-b)\,b\,d}\left(-\frac{16\,a\,(-5\,\text{Cosh}[c+d\,x]+\text{Cosh}[3\,(c+d\,x)])}{8\,a-3\,b+4\,b\,\text{Cosh}[2\,(c+d\,x)]-b\,\text{Cosh}[4\,(c+d\,x)]}+\right.$$
$$\text{RootSum}\Big[b-4\,b\,\sharp 1^2-16\,a\,\sharp 1^4+6\,b\,\sharp 1^4-4\,b\,\sharp 1^6+b\,\sharp 1^8\,\&,$$
$$\frac{1}{-b\,\sharp 1-8\,a\,\sharp 1^3+3\,b\,\sharp 1^3-3\,b\,\sharp 1^5+b\,\sharp 1^7}\Big(3\,a\,c-4\,b\,c+3\,a\,d\,x-4\,b\,d\,x+6\,a\,\text{Log}\Big[$$
$$-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1\Big]-$$
$$8\,b\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1\Big]-5\,a\,c\,\sharp 1^2+12\,b\,c\,\sharp 1^2-5\,a\,d\,x\,\sharp 1^2+12\,b\,d\,x\,\sharp 1^2-$$
$$10\,a\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1\Big]\,\sharp 1^2+24\,b\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$
$$\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1\Big]\,\sharp 1^2+5\,a\,c\,\sharp 1^4-12\,b\,c\,\sharp 1^4+$$
$$5\,a\,d\,x\,\sharp 1^4-12\,b\,d\,x\,\sharp 1^4+10\,a\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$
$$\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1\Big]\,\sharp 1^4-24\,b\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1\Big]\,\sharp 1^4-3\,a\,c\,\sharp 1^6+$$
$$4\,b\,c\,\sharp 1^6-3\,a\,d\,x\,\sharp 1^6+4\,b\,d\,x\,\sharp 1^6-6\,a\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$
$$\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1\Big]\,\sharp 1^6+8\,b\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$
$$\left.\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp 1\Big]\,\sharp 1^6\Big)\,\&\Big]\right)$$

Problem 243: Result is not expressed in closed-form.

$$\int \frac{\text{Sinh}[c+d\,x]^5}{\left(a-b\,\text{Sinh}[c+d\,x]^4\right)^2}\,dx$$

Optimal (type 3, 217 leaves, 5 steps):

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

Result (type 7, 597 leaves):

$$\frac{1}{32\,(a-b)\,b\,d}\left(\frac{32\,\text{Cosh}[c+d\,x]\,\left(2\,a+b-b\,\text{Cosh}[2\,(c+d\,x)]\right)}{8\,a-3\,b+4\,b\,\text{Cosh}[2\,(c+d\,x)]-b\,\text{Cosh}[4\,(c+d\,x)]}+\right.$$

$$\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$

$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(-b\,c-b\,d\,x-2\,b\,\text{Log}\Big[$$

$$-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]-$$

$$4\,a\,c\,\#1^2+11\,b\,c\,\#1^2-4\,a\,d\,x\,\#1^2+11\,b\,d\,x\,\#1^2-8\,a\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-$$

$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^2+22\,b\,\text{Log}\Big[$$

$$-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]$$

$$\#1^2+4\,a\,c\,\#1^4-11\,b\,c\,\#1^4+4\,a\,d\,x\,\#1^4-11\,b\,d\,x\,\#1^4+8\,a\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-$$

$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^4-$$

$$22\,b\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-$$

$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^4+b\,c\,\#1^6+b\,d\,x\,\#1^6+2\,b\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-$$

$$\left.\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^6\Big)\,\&\Big]\right)$$

Problem 244: Result is not expressed in closed-form.

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

Optimal (type 3, 186 leaves, 5 steps):

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

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

Result (type 7, 422 leaves):

$$-\frac{1}{32\,(a-b)\,d}\left(\frac{16\,(-5\,\text{Cosh}[c+d\,x]+\text{Cosh}[3\,(c+d\,x)])}{-8\,a+3\,b-4\,b\,\text{Cosh}[2\,(c+d\,x)]+b\,\text{Cosh}[4\,(c+d\,x)]}+\right.$$
$$\text{RootSum}\Big[b-4\,b\,\sharp1^2-16\,a\,\sharp1^4+6\,b\,\sharp1^4-4\,b\,\sharp1^6+b\,\sharp1^8\,\&,$$
$$\frac{1}{-b\,\sharp1-8\,a\,\sharp1^3+3\,b\,\sharp1^3-3\,b\,\sharp1^5+b\,\sharp1^7}\Big(-c-d\,x-2\,\text{Log}\Big[$$
$$-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp1\Big]+$$
$$7\,c\,\sharp1^2+7\,d\,x\,\sharp1^2+14\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$
$$\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp1\Big]\,\sharp1^2-7\,c\,\sharp1^4-7\,d\,x\,\sharp1^4-$$
$$14\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp1-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp1\Big]\,\sharp1^4+c\,\sharp1^6+d\,x\,\sharp1^6+2\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$
$$\left.\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\sharp1\Big]\,\sharp1^6\Big)\,\&\Big]\right)$$

Problem 245: Result is not expressed in closed-form.

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

Optimal (type 3, 221 leaves, 5 steps):

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

Result (type 7, 597 leaves):

$$\frac{1}{32\,a\,(a-b)\,d}\left(\frac{32\,\text{Cosh}[c+d\,x]\,\left(2\,a+b-b\,\text{Cosh}[2\,(c+d\,x)]\right)}{8\,a-3\,b+4\,b\,\text{Cosh}[2\,(c+d\,x)]-b\,\text{Cosh}[4\,(c+d\,x)]}+\right.$$
$$\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$
$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(-b\,c-b\,d\,x-2\,b\,\text{Log}\Big[$$
$$-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]+$$
$$12\,a\,c\,\#1^2-5\,b\,c\,\#1^2+12\,a\,d\,x\,\#1^2-5\,b\,d\,x\,\#1^2+24\,a\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^2-10\,b\,\text{Log}\Big[$$
$$-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]$$
$$\#1^2-12\,a\,c\,\#1^4+5\,b\,c\,\#1^4-12\,a\,d\,x\,\#1^4+5\,b\,d\,x\,\#1^4-24\,a\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^4+$$
$$10\,b\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-$$
$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^4+b\,c\,\#1^6+b\,d\,x\,\#1^6+2\,b\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$
$$\left.\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^6\Big)\,\&\Big]\right)$$

Problem 246: Result is not expressed in closed-form.

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

Optimal (type 3, 325 leaves, 11 steps):

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

Result (type 7, 774 leaves):

$$\frac{1}{32\,a^2\,d}\left(\frac{16\,a\,b\,\left(-5\,\text{Cosh}[c+d\,x]+\text{Cosh}[3\,(c+d\,x)]\right)}{(a-b)\,\left(8\,a-3\,b+4\,b\,\text{Cosh}[2\,(c+d\,x)]-b\,\text{Cosh}[4\,(c+d\,x)]\right)}-\right.$$
$$32\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+32\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\frac{1}{a-b}\,b\,\text{RootSum}\Big[$$
$$b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}$$
$$\Big(-5\,a\,c+4\,b\,c-5\,a\,d\,x+4\,b\,d\,x-10\,a\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\Big]+8\,b\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\Big]+$$
$$19\,a\,c\,\#1^2-12\,b\,c\,\#1^2+19\,a\,d\,x\,\#1^2-12\,b\,d\,x\,\#1^2+38\,a\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\Big]\,\#1^2-$$
$$24\,b\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-$$
$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\Big]\,\#1^2-19\,a\,c\,\#1^4+12\,b\,c\,\#1^4-19\,a\,d\,x\,\#1^4+12\,b\,d\,x\,\#1^4-$$
$$38\,a\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-$$
$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\Big]\,\#1^4+24\,b\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\Big]\,\#1^4+5\,a\,c\,\#1^6-4\,b\,c\,\#1^6+$$
$$5\,a\,d\,x\,\#1^6-4\,b\,d\,x\,\#1^6+10\,a\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\Big]\,\#1^6-8\,b\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$\left.\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\Big]\,\#1^6\Big)\,\&\Big]\right)$$

Problem 253: Result is not expressed in closed-form.

$$\int\frac{\text{Sinh}[c+d\,x]^9}{\left(a-b\,\text{Sinh}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 315 leaves, 6 steps):

$$\frac{\left(5\,a-14\,\sqrt{a}\,\sqrt{b}+12\,b\right)\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\,\sqrt{a}\,\left(\sqrt{a}-\sqrt{b}\right)^{5/2}\,b^{9/4}\,d}+\frac{\left(5\,a+14\,\sqrt{a}\,\sqrt{b}+12\,b\right)\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\,\sqrt{a}\,\left(\sqrt{a}+\sqrt{b}\right)^{5/2}\,b^{9/4}\,d}+$$

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

$$\frac{\text{Cosh}[c+d\,x]\,\left(9\,a^2-11\,a\,b-10\,b^2-2\,(2\,a-5\,b)\,b\,\text{Cosh}[c+d\,x]^2\right)}{32\,(a-b)^2\,b^2\,d\,\left(a-b+2\,b\,\text{Cosh}[c+d\,x]^2-b\,\text{Cosh}[c+d\,x]^4\right)}$$

Result (type 7, 1021 leaves) :

$$\frac{1}{128\,(a-b)^2\,b^2\,d}\left(\left(32\,\text{Cosh}[c+d\,x]\,\left(-9\,a^2+13\,a\,b+5\,b^2+(2\,a-5\,b)\,b\,\text{Cosh}[2\,(c+d\,x)]\right)\right)\Big/\right.$$
$$\left(8\,a-3\,b+4\,b\,\text{Cosh}[2\,(c+d\,x)]-b\,\text{Cosh}[4\,(c+d\,x)]\right)+$$
$$\frac{512\,a\,(a-b)\,\text{Cosh}[c+d\,x]\,\left(2\,a+b-b\,\text{Cosh}[2\,(c+d\,x)]\right)}{\left(-8\,a+3\,b-4\,b\,\text{Cosh}[2\,(c+d\,x)]+b\,\text{Cosh}[4\,(c+d\,x)]\right)^2}-$$
$$\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$
$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(-2\,a\,b\,c+5\,b^2\,c-2\,a\,b\,d\,x+5\,b^2\,d\,x-4\,a\,b\,\text{Log}\Big[$$
$$-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]+$$
$$10\,b^2\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-$$
$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]-10\,a^2\,c\,\#1^2+28\,a\,b\,c\,\#1^2-39\,b^2\,c\,\#1^2-10\,a^2\,d\,x\,\#1^2+$$
$$28\,a\,b\,d\,x\,\#1^2-39\,b^2\,d\,x\,\#1^2-20\,a^2\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^2+56\,a\,b\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^2-$$
$$78\,b^2\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-$$
$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^2+10\,a^2\,c\,\#1^4-28\,a\,b\,c\,\#1^4+39\,b^2\,c\,\#1^4+$$
$$10\,a^2\,d\,x\,\#1^4-28\,a\,b\,d\,x\,\#1^4+39\,b^2\,d\,x\,\#1^4+20\,a^2\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^4-$$
$$56\,a\,b\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-$$
$$\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^4+78\,b^2\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^4+2\,a\,b\,c\,\#1^6-5\,b^2\,c\,\#1^6+$$
$$2\,a\,b\,d\,x\,\#1^6-5\,b^2\,d\,x\,\#1^6+4\,a\,b\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^6-10\,b^2\,\text{Log}\Big[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-$$
$$\left.\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\,\#1\Big]\,\#1^6\Big)\,\&\Big]\right)$$

Problem 254: Result is not expressed in closed-form.

$$\int \frac{\text{Sinh}[c+d\,x]^7}{\left(a-b\,\text{Sinh}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 290 leaves, 6 steps):

$$\frac{3\left(\sqrt{a}-2\sqrt{b}\right)\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\sqrt{a}\left(\sqrt{a}-\sqrt{b}\right)^{5/2}b^{7/4}\,d}-\frac{3\left(\sqrt{a}+2\sqrt{b}\right)\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\sqrt{a}\left(\sqrt{a}+\sqrt{b}\right)^{5/2}b^{7/4}\,d}-\frac{a\,\text{Cosh}[c+d\,x]\left(2-\text{Cosh}[c+d\,x]^2\right)}{8\,(a-b)\,b\,d\left(a-b+2\,b\,\text{Cosh}[c+d\,x]^2-b\,\text{Cosh}[c+d\,x]^4\right)^2}+\frac{\text{Cosh}[c+d\,x]\left(5\,a-17\,b-3\,(a-3\,b)\,\text{Cosh}[c+d\,x]^2\right)}{32\,(a-b)^2\,b\,d\left(a-b+2\,b\,\text{Cosh}[c+d\,x]^2-b\,\text{Cosh}[c+d\,x]^4\right)}$$

Result (type 7, 802 leaves):

$$
\begin{aligned}
&\frac{1}{256\,(a-b)^2\,b\,d}\left(-\frac{32\,\mathrm{Cosh}[c+d\,x]\,\left(-7\,a+25\,b+3\,(a-3\,b)\,\mathrm{Cosh}[2\,(c+d\,x)]\right)}{8\,a-3\,b+4\,b\,\mathrm{Cosh}[2\,(c+d\,x)]-b\,\mathrm{Cosh}[4\,(c+d\,x)]}+\right.\\
&\quad\frac{512\,a\,(a-b)\,\left(-5\,\mathrm{Cosh}[c+d\,x]+\mathrm{Cosh}[3\,(c+d\,x)]\right)}{\left(-8\,a+3\,b-4\,b\,\mathrm{Cosh}[2\,(c+d\,x)]+b\,\mathrm{Cosh}[4\,(c+d\,x)]\right)^2}-\\
&\quad 3\,\mathrm{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\\
&\quad\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(a\,c-3\,b\,c+a\,d\,x-3\,b\,d\,x+2\,a\,\mathrm{Log}\Big[\\
&\qquad -\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]-\\
&\qquad 6\,b\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\\
&\qquad\quad \mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]-3\,a\,c\,\#1^2+17\,b\,c\,\#1^2-3\,a\,d\,x\,\#1^2+17\,b\,d\,x\,\#1^2-\\
&\qquad 6\,a\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\\
&\qquad\quad \mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^2+34\,b\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\\
&\qquad\quad \mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^2+3\,a\,c\,\#1^4-17\,b\,c\,\#1^4+\\
&\qquad 3\,a\,d\,x\,\#1^4-17\,b\,d\,x\,\#1^4+6\,a\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\\
&\qquad\quad \mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^4-34\,b\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\\
&\qquad\quad \mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^4-a\,c\,\#1^6+\\
&\qquad 3\,b\,c\,\#1^6-a\,d\,x\,\#1^6+3\,b\,d\,x\,\#1^6-2\,a\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\\
&\qquad\quad \mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^6+6\,b\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\\
&\qquad\quad \left.\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^6\Big)\,\&\Big]\right)
\end{aligned}
$$

Problem 255: Result is not expressed in closed-form.

$$\int \frac{\mathrm{Sinh}[c+d\,x]^5}{\left(a-b\,\mathrm{Sinh}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 313 leaves, 6 steps):

$$-\frac{\left(3\,a-10\,\sqrt{a}\,\sqrt{b}+4\,b\right)\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\,a^{3/2}\,\left(\sqrt{a}-\sqrt{b}\right)^{5/2}\,b^{5/4}\,d}-\frac{\left(3\,a+10\,\sqrt{a}\,\sqrt{b}+4\,b\right)\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\,a^{3/2}\,\left(\sqrt{a}+\sqrt{b}\right)^{5/2}\,b^{5/4}\,d}+$$

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

$$\frac{\text{Cosh}[c+d\,x]\,\left(a^2-11\,a\,b-2\,b^2+2\,b\,(2\,a+b)\,\text{Cosh}[c+d\,x]^2\right)}{32\,a\,(a-b)^2\,b\,d\,\left(a-b+2\,b\,\text{Cosh}[c+d\,x]^2-b\,\text{Cosh}[c+d\,x]^4\right)}$$

Result (type 7, 1019 leaves) :

$$-\frac{1}{128\,(a-b)^2\,b\,d}\left(\frac{32\,\text{Cosh}[c+d\,x]\,\left(a^2-9\,a\,b-b^2+b\,(2\,a+b)\,\text{Cosh}[2\,(c+d\,x)]\right)}{a\,\left(8\,a-3\,b+4\,b\,\text{Cosh}[2\,(c+d\,x)]-b\,\text{Cosh}[4\,(c+d\,x)]\right)}-\frac{512\,(a-b)\,\text{Cosh}[c+d\,x]\,\left(2\,a+b-b\,\text{Cosh}[2\,(c+d\,x)]\right)}{\left(-8\,a+3\,b-4\,b\,\text{Cosh}[2\,(c+d\,x)]+b\,\text{Cosh}[4\,(c+d\,x)]\right)^2}+\frac{1}{a}\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\right.$$

$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(2\,a\,b\,c+b^2\,c+2\,a\,b\,d\,x+b^2\,d\,x+$$

$$4\,a\,b\,\text{Log}\Big[-\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]+2\,b^2\,\text{Log}\Big[-\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]+6\,a^2\,c\,\#1^2-32\,a\,b\,c\,\#1^2+5\,b^2\,c\,\#1^2+$$

$$6\,a^2\,d\,x\,\#1^2-32\,a\,b\,d\,x\,\#1^2+5\,b^2\,d\,x\,\#1^2+12\,a^2\,\text{Log}\Big[-\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^2-$$

$$64\,a\,b\,\text{Log}\Big[-\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^2+10\,b^2\,\text{Log}\Big[-\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^2-6\,a^2\,c\,\#1^4+32\,a\,b\,c\,\#1^4-$$

$$5\,b^2\,c\,\#1^4-6\,a^2\,d\,x\,\#1^4+32\,a\,b\,d\,x\,\#1^4-5\,b^2\,d\,x\,\#1^4-12\,a^2\,\text{Log}\Big[-\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^4+$$

$$64\,a\,b\,\text{Log}\Big[-\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^4-10\,b^2\,\text{Log}\Big[-\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^4-2\,a\,b\,c\,\#1^6-b^2\,c\,\#1^6-$$

$$2\,a\,b\,d\,x\,\#1^6-b^2\,d\,x\,\#1^6-4\,a\,b\,\text{Log}\Big[-\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^6-2\,b^2\,\text{Log}\Big[-\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\tfrac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^6\Big)\,\&\Big]\Bigg)$$

Problem 256: Result is not expressed in closed-form.

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

Optimal (type 3, 288 leaves, 6 steps):

$$-\frac{\left(5\sqrt{a}-2\sqrt{b}\right)\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\,a^{3/2}\left(\sqrt{a}-\sqrt{b}\right)^{5/2}b^{3/4}\,d}+\frac{\left(5\sqrt{a}+2\sqrt{b}\right)\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\,a^{3/2}\left(\sqrt{a}+\sqrt{b}\right)^{5/2}b^{3/4}\,d}-$$
$$\frac{\text{Cosh}[c+d\,x]\left(2-\text{Cosh}[c+d\,x]^2\right)}{8\,(a-b)\,d\left(a-b+2\,b\,\text{Cosh}[c+d\,x]^2-b\,\text{Cosh}[c+d\,x]^4\right)^2}-$$
$$\frac{\text{Cosh}[c+d\,x]\left(11\,a+b-(5\,a+b)\,\text{Cosh}[c+d\,x]^2\right)}{32\,a\,(a-b)^2\,d\left(a-b+2\,b\,\text{Cosh}[c+d\,x]^2-b\,\text{Cosh}[c+d\,x]^4\right)}$$

Result (type 7, 802 leaves):

$$\frac{1}{256\,(a-b)^2\,d}\left(\frac{32\,\text{Cosh}[c+d\,x]\,\left(-17\,a-b+(5\,a+b)\,\text{Cosh}[2\,(c+d\,x)]\right)}{a\,\left(8\,a-3\,b+4\,b\,\text{Cosh}[2\,(c+d\,x)]-b\,\text{Cosh}[4\,(c+d\,x)]\right)}+\right.$$

$$\frac{512\,(a-b)\,\left(-5\,\text{Cosh}[c+d\,x]+\text{Cosh}[3\,(c+d\,x)]\right)}{\left(-8\,a+3\,b-4\,b\,\text{Cosh}[2\,(c+d\,x)]+b\,\text{Cosh}[4\,(c+d\,x)]\right)^2}+$$

$$\frac{1}{a}\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$

$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(5\,a\,c+b\,c+5\,a\,d\,x+b\,d\,x+10\,a\,\text{Log}\Big[$$

$$-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]+$$

$$2\,b\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-$$

$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]-47\,a\,c\,\#1^2+5\,b\,c\,\#1^2-47\,a\,d\,x\,\#1^2+5\,b\,d\,x\,\#1^2-$$

$$94\,a\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-$$

$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^2+10\,b\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$

$$\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^2+47\,a\,c\,\#1^4-5\,b\,c\,\#1^4+$$

$$47\,a\,d\,x\,\#1^4-5\,b\,d\,x\,\#1^4+94\,a\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$

$$\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^4-10\,b\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$

$$\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^4-5\,a\,c\,\#1^6-$$

$$b\,c\,\#1^6-5\,a\,d\,x\,\#1^6-b\,d\,x\,\#1^6-10\,a\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$

$$\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^6-2\,b\,\text{Log}\Big[-\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$

$$\left.\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Cosh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1-\text{Sinh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\#1\Big]\,\#1^6\Big)\,\&\Big]\right)$$

Problem 257: Result is not expressed in closed-form.

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

Optimal (type 3, 313 leaves, 6 steps):

$$\frac{3\left(7a-10\sqrt{a}\sqrt{b}+4b\right)\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\,a^{5/2}\left(\sqrt{a}-\sqrt{b}\right)^{5/2}b^{1/4}\,d}+\frac{3\left(7a+10\sqrt{a}\sqrt{b}+4b\right)\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\,a^{5/2}\left(\sqrt{a}+\sqrt{b}\right)^{5/2}b^{1/4}\,d}+$$

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

$$\frac{\text{Cosh}[c+d\,x]\left((7a-3b)(a+2b)-6\,(2a-b)\,b\,\text{Cosh}[c+d\,x]^2\right)}{32\,a^2\,(a-b)^2\,d\left(a-b+2\,b\,\text{Cosh}[c+d\,x]^2-b\,\text{Cosh}[c+d\,x]^4\right)}$$

Result (type 7, 1018 leaves) :

$$
\begin{aligned}
&\frac{1}{128\,a^2\,(a-b)^2\,d}\Bigg(\frac{32\,\mathrm{Cosh}[c+d\,x]\,\left(7\,a^2+5\,a\,b-3\,b^2+3\,b\,(-2\,a+b)\,\mathrm{Cosh}[2\,(c+d\,x)]\right)}{8\,a-3\,b+4\,b\,\mathrm{Cosh}[2\,(c+d\,x)]-b\,\mathrm{Cosh}[4\,(c+d\,x)]}+\\
&\quad\frac{512\,a\,(a-b)\,\mathrm{Cosh}[c+d\,x]\,\left(2\,a+b-b\,\mathrm{Cosh}[2\,(c+d\,x)]\right)}{\left(-8\,a+3\,b-4\,b\,\mathrm{Cosh}[2\,(c+d\,x)]+b\,\mathrm{Cosh}[4\,(c+d\,x)]\right)^2}+\\
&\quad 3\,\mathrm{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\\
&\quad\quad\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(-2\,a\,b\,c+b^2\,c-2\,a\,b\,d\,x+b^2\,d\,x-4\,a\,b\,\mathrm{Log}\Big[\\
&\quad\quad\quad -\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]+\\
&\quad\quad 2\,b^2\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\\
&\quad\quad\quad \mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]+14\,a^2\,c\,\#1^2-12\,a\,b\,c\,\#1^2+5\,b^2\,c\,\#1^2+14\,a^2\,d\,x\,\#1^2-\\
&\quad\quad 12\,a\,b\,d\,x\,\#1^2+5\,b^2\,d\,x\,\#1^2+28\,a^2\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\\
&\quad\quad\quad \mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^2-24\,a\,b\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\\
&\quad\quad\quad \mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^2+\\
&\quad\quad 10\,b^2\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\\
&\quad\quad\quad \mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^2-14\,a^2\,c\,\#1^4+12\,a\,b\,c\,\#1^4-5\,b^2\,c\,\#1^4-\\
&\quad\quad 14\,a^2\,d\,x\,\#1^4+12\,a\,b\,d\,x\,\#1^4-5\,b^2\,d\,x\,\#1^4-28\,a^2\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\\
&\quad\quad\quad \mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^4+\\
&\quad\quad 24\,a\,b\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\\
&\quad\quad\quad \mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^4-10\,b^2\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\\
&\quad\quad\quad \mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^4+2\,a\,b\,c\,\#1^6-b^2\,c\,\#1^6+\\
&\quad\quad 2\,a\,b\,d\,x\,\#1^6-b^2\,d\,x\,\#1^6+4\,a\,b\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\\
&\quad\quad\quad \mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^6-2\,b^2\,\mathrm{Log}\Big[-\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]-\\
&\quad\quad\quad \mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]+\mathrm{Cosh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1-\mathrm{Sinh}\left[\tfrac{1}{2}\,(c+d\,x)\right]\#1\Big]\#1^6\Big)\,\&\Big]\Bigg)
\end{aligned}
$$

Problem 258: Result is not expressed in closed-form.

$$
\int\frac{\mathrm{Csch}[c+d\,x]}{\left(a-b\,\mathrm{Sinh}[c+d\,x]^4\right)^3}\,dx
$$

Optimal (type 3, 617 leaves, 16 steps):

$$-\frac{\left(5\sqrt{a}-2\sqrt{b}\right)b^{1/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\,a^{5/2}\left(\sqrt{a}-\sqrt{b}\right)^{5/2}d}-\frac{b^{1/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8\,a^{5/2}\left(\sqrt{a}-\sqrt{b}\right)^{3/2}d}-\frac{b^{1/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{2\,a^{3}\sqrt{\sqrt{a}-\sqrt{b}}\,d}-\frac{\text{ArcTanh}[\text{Cosh}[c+d\,x]]}{a^{3}\,d}+\frac{b^{1/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8\,a^{5/2}\left(\sqrt{a}+\sqrt{b}\right)^{3/2}d}+\frac{b^{1/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{2\,a^{3}\sqrt{\sqrt{a}+\sqrt{b}}\,d}+\frac{\left(5\sqrt{a}+2\sqrt{b}\right)b^{1/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cosh}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\,a^{5/2}\left(\sqrt{a}+\sqrt{b}\right)^{5/2}d}-\frac{b\,\text{Cosh}[c+d\,x]\left(2-\text{Cosh}[c+d\,x]^{2}\right)}{8\,a\,(a-b)\,d\left(a-b+2\,b\,\text{Cosh}[c+d\,x]^{2}-b\,\text{Cosh}[c+d\,x]^{4}\right)^{2}}-\frac{b\,\text{Cosh}[c+d\,x]\left(2-\text{Cosh}[c+d\,x]^{2}\right)}{4\,a^{2}\,(a-b)\,d\left(a-b+2\,b\,\text{Cosh}[c+d\,x]^{2}-b\,\text{Cosh}[c+d\,x]^{4}\right)}-\frac{b\,\text{Cosh}[c+d\,x]\left(11\,a+b-(5\,a+b)\,\text{Cosh}[c+d\,x]^{2}\right)}{32\,a^{2}\,(a-b)^{2}\,d\left(a-b+2\,b\,\text{Cosh}[c+d\,x]^{2}-b\,\text{Cosh}[c+d\,x]^{4}\right)}$$

Result (type 7, 1274 leaves):

$$\frac{2\left(-5\,b\,\text{Cosh}[c+d\,x]+b\,\text{Cosh}[3\,(c+d\,x)]\right)}{a\,(a-b)\,d\left(-8\,a+3\,b-4\,b\,\text{Cosh}[2\,(c+d\,x)]+b\,\text{Cosh}[4\,(c+d\,x)]\right)^2}+$$

$$\left(69\,a\,b\,\text{Cosh}[c+d\,x]-39\,b^2\,\text{Cosh}[c+d\,x]-13\,a\,b\,\text{Cosh}[3\,(c+d\,x)]+7\,b^2\,\text{Cosh}[3\,(c+d\,x)]\right)\Big/$$

$$\left(16\,a^2\,(a-b)^2\,d\left(-8\,a+3\,b-4\,b\,\text{Cosh}[2\,(c+d\,x)]+b\,\text{Cosh}[4\,(c+d\,x)]\right)\right)-$$

$$\frac{\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{a^3\,d}+\frac{\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{a^3\,d}+$$

$$\frac{1}{256\,a^3\,(a-b)^2\,d}\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$

$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(45\,a^2\,b\,c-71\,a\,b^2\,c+32\,b^3\,c+45\,a^2\,b\,d\,x-71\,a\,b^2\,d\,x+$$

$$32\,b^3\,d\,x+90\,a^2\,b\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\right.$$

$$\left.\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]-142\,a\,b^2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$

$$\left.\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]+64\,b^3\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\right.$$

$$\left.\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]-199\,a^2\,b\,c\,\#1^2+$$

$$253\,a\,b^2\,c\,\#1^2-96\,b^3\,c\,\#1^2-199\,a^2\,b\,d\,x\,\#1^2+253\,a\,b^2\,d\,x\,\#1^2-96\,b^3\,d\,x\,\#1^2-398\,a^2\,b$$

$$\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]$$

$$\#1^2+506\,a\,b^2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\right.$$

$$\left.\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]\#1^2-192\,b^3\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$

$$\left.\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]\#1^2+199\,a^2\,b\,c\,\#1^4-$$

$$253\,a\,b^2\,c\,\#1^4+96\,b^3\,c\,\#1^4+199\,a^2\,b\,d\,x\,\#1^4-253\,a\,b^2\,d\,x\,\#1^4+96\,b^3\,d\,x\,\#1^4+398\,a^2\,b$$

$$\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]$$

$$\#1^4-506\,a\,b^2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\right.$$

$$\left.\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]\#1^4+192\,b^3\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$

$$\left.\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]\#1^4-45\,a^2\,b\,c\,\#1^6+$$

$$71\,a\,b^2\,c\,\#1^6-32\,b^3\,c\,\#1^6-45\,a^2\,b\,d\,x\,\#1^6+71\,a\,b^2\,d\,x\,\#1^6-32\,b^3\,d\,x\,\#1^6-90\,a^2\,b$$

$$\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]$$

$$\#1^6+142\,a\,b^2\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\right.$$

$$\left.\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]\#1^6-64\,b^3\,\text{Log}\left[-\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\right.$$

$$\left.\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\#1\right]\#1^6\Big)\,\&\Big]$$

Problem 266: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{1+\text{Sinh}[x]^4}\,dx$$

Optimal (type 3, 176 leaves, 10 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{1+\sqrt{2}}-2\,\text{Tanh}[x]}{\sqrt{-1+\sqrt{2}}}\right]}{4\sqrt{1+\sqrt{2}}}+\frac{\text{ArcTan}\left[\frac{\sqrt{1+\sqrt{2}}+2\,\text{Tanh}[x]}{\sqrt{-1+\sqrt{2}}}\right]}{4\sqrt{1+\sqrt{2}}}-\frac{1}{8}\sqrt{1+\sqrt{2}}\,\text{Log}\left[\sqrt{2}-2\sqrt{1+\sqrt{2}}\,\text{Tanh}[x]+2\,\text{Tanh}[x]^2\right]+\frac{1}{8}\sqrt{1+\sqrt{2}}\,\text{Log}\left[1+\sqrt{2\left(1+\sqrt{2}\right)}\,\text{Tanh}[x]+\sqrt{2}\,\text{Tanh}[x]^2\right]$$

Result (type 3, 45 leaves):

$$\frac{\text{ArcTanh}\left[\sqrt{1-i}\,\text{Tanh}[x]\right]}{2\sqrt{1-i}}+\frac{\text{ArcTanh}\left[\sqrt{1+i}\,\text{Tanh}[x]\right]}{2\sqrt{1+i}}$$

Problem 267: Result is not expressed in closed-form.

$$\int \frac{1}{a+b\,\text{Sinh}[x]^5}\,dx$$

Optimal (type 3, 435 leaves, 17 steps):

$$-\frac{2\,\text{ArcTanh}\left[\frac{b^{1/5}-a^{1/5}\,\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{a^{2/5}+b^{2/5}}}\right]}{5\,a^{4/5}\sqrt{a^{2/5}+b^{2/5}}}+\frac{2\,(-1)^{9/10}\,\text{ArcTanh}\left[\frac{(-1)^{9/10}\left((-1)^{1/5}\,b^{1/5}+a^{1/5}\,\text{Tanh}\left[\frac{x}{2}\right]\right)}{\sqrt{-(-1)^{4/5}\,a^{2/5}+(-1)^{1/5}\,b^{2/5}}}\right]}{5\,a^{4/5}\sqrt{-(-1)^{4/5}\,a^{2/5}+(-1)^{1/5}\,b^{2/5}}}+\frac{2\,(-1)^{1/5}\,\text{ArcTanh}\left[\frac{b^{1/5}+(-1)^{1/5}\,a^{1/5}\,\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{(-1)^{2/5}\,a^{2/5}+b^{2/5}}}\right]}{5\,a^{4/5}\sqrt{(-1)^{2/5}\,a^{2/5}+b^{2/5}}}+\frac{2\,(-1)^{9/10}\,\text{ArcTanh}\left[\frac{(-1)^{3/10}\left(b^{1/5}+(-1)^{3/5}\,a^{1/5}\,\text{Tanh}\left[\frac{x}{2}\right]\right)}{\sqrt{-(-1)^{4/5}\,a^{2/5}+(-1)^{3/5}\,b^{2/5}}}\right]}{5\,a^{4/5}\sqrt{-(-1)^{4/5}\,a^{2/5}+(-1)^{3/5}\,b^{2/5}}}-\frac{2\,(-1)^{9/10}\,\text{ArcTanh}\left[\frac{i\,b^{1/5}-(-1)^{9/10}\,a^{1/5}\,\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{-(-1)^{4/5}\,a^{2/5}-b^{2/5}}}\right]}{5\,a^{4/5}\sqrt{-(-1)^{4/5}\,a^{2/5}-b^{2/5}}}$$

Result (type 7, 141 leaves):

$$\frac{8}{5}\,\text{RootSum}\left[-b+5\,b\,\#1^2-10\,b\,\#1^4+32\,a\,\#1^5+10\,b\,\#1^6-5\,b\,\#1^8+b\,\#1^{10}\,\&,\ \frac{x\,\#1^3+2\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1^3}{b-4\,b\,\#1^2+16\,a\,\#1^3+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8}\,\&\right]$$

Problem 268: Result is not expressed in closed-form.

$$\int \frac{1}{a + b \operatorname{Sinh}[x]^6} \, dx$$

Optimal (type 3, 175 leaves, 7 steps):

$$\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{a^{1/3}-b^{1/3}} \operatorname{Tanh}[x]}{a^{1/6}}\right]}{3 a^{5/6} \sqrt{a^{1/3}-b^{1/3}}}+\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{a^{1/3}+(-1)^{1/3} b^{1/3}} \operatorname{Tanh}[x]}{a^{1/6}}\right]}{3 a^{5/6} \sqrt{a^{1/3}+(-1)^{1/3} b^{1/3}}}+\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{a^{1/3}-(-1)^{2/3} b^{1/3}} \operatorname{Tanh}[x]}{a^{1/6}}\right]}{3 a^{5/6} \sqrt{a^{1/3}-(-1)^{2/3} b^{1/3}}}$$

Result (type 7, 134 leaves):

$$\frac{16}{3} \operatorname{RootSum}\Big[b - 6 b \#1 + 15 b \#1^2 + 64 a \#1^3 - 20 b \#1^3 + 15 b \#1^4 - 6 b \#1^5 + b \#1^6 \&,$$
$$\frac{x \#1^2 + \operatorname{Log}[-\operatorname{Cosh}[x] - \operatorname{Sinh}[x] + \operatorname{Cosh}[x] \#1 - \operatorname{Sinh}[x] \#1] \#1^2}{-b + 5 b \#1 + 32 a \#1^2 - 10 b \#1^2 + 10 b \#1^3 - 5 b \#1^4 + b \#1^5} \&\Big]$$

Problem 269: Result is not expressed in closed-form.

$$\int \frac{1}{a + b \operatorname{Sinh}[x]^8} \, dx$$

Optimal (type 3, 245 leaves, 9 steps):

$$-\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{(-a)^{1/4}-b^{1/4}} \operatorname{Tanh}[x]}{(-a)^{1/8}}\right]}{4 (-a)^{7/8} \sqrt{(-a)^{1/4}-b^{1/4}}}-\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{(-a)^{1/4}-i b^{1/4}} \operatorname{Tanh}[x]}{(-a)^{1/8}}\right]}{4 (-a)^{7/8} \sqrt{(-a)^{1/4}-i b^{1/4}}}-$$
$$\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{(-a)^{1/4}+i b^{1/4}} \operatorname{Tanh}[x]}{(-a)^{1/8}}\right]}{4 (-a)^{7/8} \sqrt{(-a)^{1/4}+i b^{1/4}}}-\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{(-a)^{1/4}+b^{1/4}} \operatorname{Tanh}[x]}{(-a)^{1/8}}\right]}{4 (-a)^{7/8} \sqrt{(-a)^{1/4}+b^{1/4}}}$$

Result (type 7, 160 leaves):

$$16 \operatorname{RootSum}\Big[b - 8 b \#1 + 28 b \#1^2 - 56 b \#1^3 + 256 a \#1^4 + 70 b \#1^4 - 56 b \#1^5 + 28 b \#1^6 - 8 b \#1^7 + b \#1^8 \&,$$
$$\left(x \#1^3 + \operatorname{Log}[-\operatorname{Cosh}[x] - \operatorname{Sinh}[x] + \operatorname{Cosh}[x] \#1 - \operatorname{Sinh}[x] \#1] \#1^3\right) \Big/$$
$$\left(-b + 7 b \#1 - 21 b \#1^2 + 128 a \#1^3 + 35 b \#1^3 - 35 b \#1^4 + 21 b \#1^5 - 7 b \#1^6 + b \#1^7\right) \&\Big]$$

Problem 270: Result is not expressed in closed-form.

$$\int \frac{1}{1 + \operatorname{Sinh}[x]^5} \, dx$$

Optimal (type 3, 242 leaves, 17 steps):

$$-\frac{2\,(-1)^{3/5}\,\text{ArcTan}\left[\frac{1+(-1)^{3/5}\,\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{-1+(-1)^{1/5}}}\right]}{5\,\sqrt{-1+(-1)^{1/5}}}+$$

$$\frac{2\,(-1)^{9/10}\,\text{ArcTan}\left[\frac{i-(-1)^{9/10}\,\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{1+(-1)^{4/5}}}\right]}{5\,\sqrt{1+(-1)^{4/5}}}-\frac{1}{5}\sqrt{2}\,\text{ArcTanh}\left[\frac{1-\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{2}}\right]+$$

$$\frac{2\,(-1)^{9/10}\,\text{ArcTanh}\left[\frac{(-1)^{7/10}\left(1+(-1)^{1/5}\,\text{Tanh}\left[\frac{x}{2}\right]\right)}{\sqrt{-(-1)^{2/5}\left(1+(-1)^{2/5}\right)}}\right]}{5\,\sqrt{-(-1)^{2/5}\left(1+(-1)^{2/5}\right)}}-\frac{2\,(-1)^{4/5}\,\text{ArcTanh}\left[\frac{1-(-1)^{4/5}\,\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{1-(-1)^{3/5}}}\right]}{5\,\sqrt{1-(-1)^{3/5}}}$$

Result (type 7, 439 leaves):

$$\frac{1}{10}\left(2\sqrt{2}\,\text{ArcTanh}\left[\frac{-1+\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{2}}\right]-\right.$$

$$\text{RootSum}\Big[1+2\,\#1+2\,\#1^3+14\,\#1^4-2\,\#1^5-2\,\#1^7+\#1^8\,\&,\ \frac{1}{1+3\,\#1^2+28\,\#1^3-5\,\#1^4-7\,\#1^6+4\,\#1^7}$$

$$\Big(-x-2\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]-4\,x\,\#1-$$

$$8\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1-9\,x\,\#1^2-$$

$$18\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1^2-24\,x\,\#1^3-$$

$$48\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1^3+9\,x\,\#1^4+$$

$$18\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1^4-4\,x\,\#1^5-$$

$$8\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1^5+x\,\#1^6+$$

$$\left.2\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1^6\Big)\,\&\Big]\right)$$

Problem 272: Result is not expressed in closed-form.

$$\int\frac{1}{1+\text{Sinh}[x]^8}\,dx$$

Optimal (type 3, 129 leaves, 9 steps):

$$\frac{\text{ArcTanh}\left[\sqrt{1-(-1)^{1/4}}\ \text{Tanh}[x]\right]}{4\sqrt{1-(-1)^{1/4}}}+\frac{\text{ArcTanh}\left[\sqrt{1+(-1)^{1/4}}\ \text{Tanh}[x]\right]}{4\sqrt{1+(-1)^{1/4}}}+\frac{\text{ArcTanh}\left[\sqrt{1-(-1)^{3/4}}\ \text{Tanh}[x]\right]}{4\sqrt{1-(-1)^{3/4}}}+\frac{\text{ArcTanh}\left[\sqrt{1+(-1)^{3/4}}\ \text{Tanh}[x]\right]}{4\sqrt{1+(-1)^{3/4}}}$$

Result (type 7, 127 leaves):

$$16\ \text{RootSum}\Big[1-8\ \#1+28\ \#1^2-56\ \#1^3+326\ \#1^4-56\ \#1^5+28\ \#1^6-8\ \#1^7+\#1^8\ \&,\ \frac{x\ \#1^3+\text{Log}[-\text{Cosh}[x]-\text{Sinh}[x]+\text{Cosh}[x]\ \#1-\text{Sinh}[x]\ \#1]\ \#1^3}{-1+7\ \#1-21\ \#1^2+163\ \#1^3-35\ \#1^4+21\ \#1^5-7\ \#1^6+\#1^7}\ \&\Big]$$

Problem 273: Result is not expressed in closed-form.

$$\int \frac{1}{1-\text{Sinh}[x]^5}\,dx$$

Optimal (type 3, 228 leaves, 17 steps):

$$-\frac{2\,(-1)^{1/10}\,\text{ArcTan}\left[\frac{i+(-1)^{1/10}\,\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{1-(-1)^{1/5}}}\right]}{5\sqrt{1-(-1)^{1/5}}}-\frac{2\,\text{ArcTanh}\left[\frac{(-1)^{3/5}-\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{1-(-1)^{1/5}}}\right]}{5\sqrt{1-(-1)^{1/5}}}+\frac{1}{5}\sqrt{2}\,\text{ArcTanh}\left[\frac{1+\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{2}}\right]+\frac{2\,\text{ArcTanh}\left[\frac{(-1)^{4/5}+\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{1-(-1)^{3/5}}}\right]}{5\sqrt{1-(-1)^{3/5}}}-\frac{2\,(-1)^{1/10}\,\text{ArcTanh}\left[\frac{(-1)^{3/10}\left(1+(-1)^{4/5}\,\text{Tanh}\left[\frac{x}{2}\right]\right)}{\sqrt{(-1)^{1/5}+(-1)^{3/5}}}\right]}{5\sqrt{(-1)^{1/5}+(-1)^{3/5}}}$$

Result (type 7, 437 leaves):

$$\frac{1}{10}\Bigg(2\sqrt{2}\,\text{ArcTanh}\left[\frac{1+\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{2}}\right]+\text{RootSum}\Big[1-2\ \#1-2\ \#1^3+14\ \#1^4+2\ \#1^5+2\ \#1^7+\#1^8\ \&,\ \frac{1}{-1-3\ \#1^2+28\ \#1^3+5\ \#1^4+7\ \#1^6+4\ \#1^7}$$
$$\Big(-x-2\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]+4\,x\,\#1+$$
$$8\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1-9\,x\,\#1^2-$$
$$18\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1^2+24\,x\,\#1^3+$$
$$48\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1^3+9\,x\,\#1^4+$$
$$18\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1^4+4\,x\,\#1^5+$$
$$8\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1^5+x\,\#1^6+$$
$$2\,\text{Log}\left[-\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]+\text{Cosh}\left[\frac{x}{2}\right]\#1-\text{Sinh}\left[\frac{x}{2}\right]\#1\right]\#1^6\Big)\ \&\Big]\Bigg)$$

Problem 292: Result more than twice size of optimal antiderivative.

$$\int \text{Sech}[c+d x]^6 \left(a+b \text{Sinh}[c+d x]^2\right) dx$$

Optimal (type 3, 54 leaves, 3 steps):

$$\frac{a \text{Tanh}[c+d x]}{d}-\frac{(2 a-b) \text{Tanh}[c+d x]^3}{3 d}+\frac{(a-b) \text{Tanh}[c+d x]^5}{5 d}$$

Result (type 3, 117 leaves):

$$\frac{8 a \text{Tanh}[c+d x]}{15 d}+\frac{2 b \text{Tanh}[c+d x]}{15 d}+\frac{4 a \text{Sech}[c+d x]^2 \text{Tanh}[c+d x]}{15 d}+\frac{b \text{Sech}[c+d x]^2 \text{Tanh}[c+d x]}{15 d}+\frac{a \text{Sech}[c+d x]^4 \text{Tanh}[c+d x]}{5 d}-\frac{b \text{Sech}[c+d x]^4 \text{Tanh}[c+d x]}{5 d}$$

Problem 315: Result more than twice size of optimal antiderivative.

$$\int \text{Sech}[c+d x]^8 \left(a+b \text{Sinh}[c+d x]^2\right)^3 dx$$

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

$$\frac{a^3 \text{Tanh}[c+d x]}{d}-\frac{a^2 (a-b) \text{Tanh}[c+d x]^3}{d}+\frac{3 a (a-b)^2 \text{Tanh}[c+d x]^5}{5 d}-\frac{(a-b)^3 \text{Tanh}[c+d x]^7}{7 d}$$

Result (type 3, 163 leaves):

$$\frac{1}{1120 d}\Big(512 a^3-304 a^2 b+192 a b^2-50 b^3+\left(464 a^3+232 a^2 b-246 a b^2+75 b^3\right) \text{Cosh}[2 (c+d x)]+ 2 \left(64 a^3+32 a^2 b+24 a b^2-15 b^3\right) \text{Cosh}[4 (c+d x)]+ 16 a^3 \text{Cosh}[6 (c+d x)]+8 a^2 b \text{Cosh}[6 (c+d x)]+6 a b^2 \text{Cosh}[6 (c+d x)]+ 5 b^3 \text{Cosh}[6 (c+d x)]\Big) \text{Sech}[c+d x]^6 \text{Tanh}[c+d x]$$

Problem 345: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 159 leaves, 6 steps):

$$\frac{\text{ArcTan}[\text{Sinh}[c+d x]]}{(a-b)^3 d}-\frac{\sqrt{b} \left(15 a^2-10 a b+3 b^2\right) \text{ArcTan}\left[\frac{\sqrt{b} \text{Sinh}[c+d x]}{\sqrt{a}}\right]}{8 a^{5/2} (a-b)^3 d}-\frac{b \text{Sinh}[c+d x]}{4 a (a-b) d \left(a+b \text{Sinh}[c+d x]^2\right)^2}-\frac{(7 a-3 b) b \text{Sinh}[c+d x]}{8 a^2 (a-b)^2 d \left(a+b \text{Sinh}[c+d x]^2\right)}$$

Result (type 3, 321 leaves):

$$\frac{1}{8 a^{5/2} (a-b)^3 d \left(2 a-b+b \operatorname{Cosh}[2 (c+d x)]\right)^2} \left((-2 a+b)^2 \left(\sqrt{b} \left(15 a^2-10 a b+3 b^2\right) \operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Csch}[c+d x]}{\sqrt{b}}\right]+16 a^{5/2} \operatorname{ArcTan}\left[\operatorname{Tanh}\left[\frac{1}{2} (c+d x)\right]\right]\right)+\left(b^{5/2} \left(15 a^2-10 a b+3 b^2\right) \operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Csch}[c+d x]}{\sqrt{b}}\right]+16 a^{5/2} b^2 \operatorname{ArcTan}\left[\operatorname{Tanh}\left[\frac{1}{2} (c+d x)\right]\right]\right) \operatorname{Cosh}[2 (c+d x)]^2-2 \sqrt{a} b \left(18 a^3-35 a^2 b+20 a b^2-3 b^3\right) \operatorname{Sinh}[c+d x]-2 b \operatorname{Cosh}[2 (c+d x)] \left(-(2 a-b) \left(\sqrt{b} \left(15 a^2-10 a b+3 b^2\right) \operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Csch}[c+d x]}{\sqrt{b}}\right]+16 a^{5/2} \operatorname{ArcTan}\left[\operatorname{Tanh}\left[\frac{1}{2} (c+d x)\right]\right]\right)+\sqrt{a} b \left(7 a^2-10 a b+3 b^2\right) \operatorname{Sinh}[c+d x]\right)\right)$$

Problem 350: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cosh}[x]^3}{1-\operatorname{Sinh}[x]^2} \, dx$$

Optimal (type 3, 10 leaves, 3 steps):

$$2 \operatorname{ArcTanh}[\operatorname{Sinh}[x]]-\operatorname{Sinh}[x]$$

Result (type 3, 29 leaves):

$$-2 \left(\frac{1}{2} \operatorname{Log}[1-\operatorname{Sinh}[x]]-\frac{1}{2} \operatorname{Log}[1+\operatorname{Sinh}[x]]+\frac{\operatorname{Sinh}[x]}{2}\right)$$

Problem 357: Result unnecessarily involves imaginary or complex numbers.

$$\int \operatorname{Cosh}[e+f x]^4 \sqrt{a+b \operatorname{Sinh}[e+f x]^2} \, dx$$

Optimal (type 4, 301 leaves, 7 steps):

$$-\frac{2\,(a-3\,b)\,\text{Cosh}[e+f\,x]\,\text{Sinh}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{15\,b\,f}+$$

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

$$\left(\left(2\,a^2-7\,a\,b-3\,b^2\right)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Bigg/\left(15\,b^2\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)-$$

$$\left((a-9\,b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Bigg/\left(15\,b\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)-$$

$$\frac{\left(2\,a^2-7\,a\,b-3\,b^2\right)\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{15\,b^2\,f}$$

Result (type 4, 211 leaves):

$$\left(16\,i\,a\,\left(2\,a^2-7\,a\,b-3\,b^2\right)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticE}\left[i\,(e+f\,x),\,\frac{b}{a}\right]-32\,i\,a\,\left(a^2-4\,a\,b+3\,b^2\right)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[i\,(e+f\,x),\,\frac{b}{a}\right]+\sqrt{2}\,b\,\left(8\,a^2+32\,a\,b-15\,b^2+4\,b\,(4\,a+3\,b)\,\text{Cosh}[2\,(e+f\,x)]+3\,b^2\,\text{Cosh}[4\,(e+f\,x)]\right)\,\text{Sinh}[2\,(e+f\,x)]\right)\Bigg/\left(240\,b^2\,f\,\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}\right)$$

Problem 358: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 223 leaves, 6 steps):

$$\frac{\text{Cosh}[e+f x]\,\text{Sinh}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}}{3 f}-\left((a+b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3 b f\sqrt{\frac{\text{Sech}[e+f x]^2\,(a+b\,\text{Sinh}[e+f x]^2)}{a}}\right)+\left(2\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3 f\sqrt{\frac{\text{Sech}[e+f x]^2\,(a+b\,\text{Sinh}[e+f x]^2)}{a}}\right)+\frac{(a+b)\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{3 b f}$$

Result (type 4, 168 leaves) :

$$\left(-2\,\mathrm{i}\sqrt{2}\,a\,(a+b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticE}\left[\mathrm{i}\,(e+f x),\frac{b}{a}\right]+2\,\mathrm{i}\sqrt{2}\,a\,(a-b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticF}\left[\mathrm{i}\,(e+f x),\frac{b}{a}\right]+b\,(2a-b+b\,\text{Cosh}[2\,(e+f x)])\,\text{Sinh}[2\,(e+f x)]\right)\Big/\left(6 b f\sqrt{4a-2b+2b\,\text{Cosh}[2\,(e+f x)]}\right)$$

Problem 360: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 70 leaves, 2 steps) :

$$\left(\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(f\sqrt{\frac{\text{Sech}[e+f x]^2\,(a+b\,\text{Sinh}[e+f x]^2)}{a}}\right)$$

Result (type 4, 148 leaves) :

$$\left(2\,i\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\ \text{EllipticE}\left[i(e+fx),\frac{b}{a}\right]-2\,i\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\ \text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]+\sqrt{2}\,(2a-b+b\,\text{Cosh}[2(e+fx)])\,\text{Tanh}[e+fx]\right)\Big/\left(2f\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\right)$$

Problem 361: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sech}[e+fx]^4\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,dx$$

Optimal (type 4, 206 leaves, 5 steps):

$$\left((2a-b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Big/\left(3(a-b)f\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)-\left(b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Big/\left(3(a-b)f\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)+\frac{\text{Sech}[e+fx]^2\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,\text{Tanh}[e+fx]}{3f}$$

Result (type 4, 204 leaves):

$$\left(8\,i\,a\,(2a-b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\ \text{EllipticE}\left[i(e+fx),\frac{b}{a}\right]-16\,i\,a\,(a-b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\ \text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]+\sqrt{2}\left(\left(8a^2-4b^2\right)\text{Cosh}[2(e+fx)]+(2a-b)\,(8a-5b+b\,\text{Cosh}[4(e+fx)])\right)\text{Sech}[e+fx]^2\,\text{Tanh}[e+fx]\right)\Big/\left(24(a-b)f\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\right)$$

Problem 368: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Cosh}[e+f x]^4 \left(a+b\,\text{Sinh}[e+f x]^2\right)^{3/2} dx$$

Optimal (type 4, 357 leaves, 8 steps):

$$\frac{\left(a^2+9 a b-2 b^2\right) \text{Cosh}[e+f x]\,\text{Sinh}[e+f x] \sqrt{a+b\,\text{Sinh}[e+f x]^2}}{35 b f}+\frac{2 (4 a-b) \text{Cosh}[e+f x]^3\,\text{Sinh}[e+f x] \sqrt{a+b\,\text{Sinh}[e+f x]^2}}{35 f}+\frac{b\,\text{Cosh}[e+f x]^5\,\text{Sinh}[e+f x] \sqrt{a+b\,\text{Sinh}[e+f x]^2}}{7 f}+\left(2 (a+b) \left(a^2-6 a b+b^2\right) \text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Bigg/\left(35 b^2 f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)-\left(\left(a^2-18 a b+b^2\right) \text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Bigg/\left(35 b f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)-\frac{2 (a+b) \left(a^2-6 a b+b^2\right) \sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{35 b^2 f}$$

Result (type 4, 256 leaves):

$$\frac{1}{2240 b^2 f \sqrt{2 a-b+b\,\text{Cosh}[2 (e+f x)]}}\left(128\,i\,a \left(a^3-5 a^2 b-5 a b^2+b^3\right) \sqrt{\frac{2 a-b+b\,\text{Cosh}[2 (e+f x)]}{a}}\,\text{EllipticE}\left[i (e+f x),\frac{b}{a}\right]-64\,i\,a \left(2 a^3-11 a^2 b+8 a b^2+b^3\right) \sqrt{\frac{2 a-b+b\,\text{Cosh}[2 (e+f x)]}{a}}\,\text{EllipticF}\left[i (e+f x),\frac{b}{a}\right]+\sqrt{2}\,b \left(32 a^3+400 a^2 b-212 a b^2+30 b^3+b \left(144 a^2+192 a b-37 b^2\right) \text{Cosh}[2 (e+f x)]+2 b^2 (26 a+b) \text{Cosh}[4 (e+f x)]+5 b^3\,\text{Cosh}[6 (e+f x)]\right) \text{Sinh}[2 (e+f x)]\right)$$

Problem 369: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 299 leaves, 7 steps):

$$\frac{2 (3 a-b) \text{Cosh}[e+f x] \text{Sinh}[e+f x] \sqrt{a+b \text{Sinh}[e+f x]^2}}{15 f}+\frac{b \text{Cosh}[e+f x]^3 \text{Sinh}[e+f x] \sqrt{a+b \text{Sinh}[e+f x]^2}}{5 f}-\left(\left(3 a^2+7 a b-2 b^2\right) \text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b \text{Sinh}[e+f x]^2}\right) \Big/ \left(15 b f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b \text{Sinh}[e+f x]^2\right)}{a}}\right)+\left((9 a-b) \text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b \text{Sinh}[e+f x]^2}\right) \Big/ \left(15 f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b \text{Sinh}[e+f x]^2\right)}{a}}\right)+\frac{\left(3 a^2+7 a b-2 b^2\right) \sqrt{a+b \text{Sinh}[e+f x]^2} \text{Tanh}[e+f x]}{15 b f}$$

Result (type 4, 213 leaves):

$$\left(-16 i a \left(3 a^2+7 a b-2 b^2\right) \sqrt{\frac{2 a-b+b \text{Cosh}[2 (e+f x)]}{a}} \text{EllipticE}\left[i (e+f x),\frac{b}{a}\right]+16 i a \left(3 a^2-2 a b-b^2\right) \sqrt{\frac{2 a-b+b \text{Cosh}[2 (e+f x)]}{a}} \text{EllipticF}\left[i (e+f x),\frac{b}{a}\right]+\sqrt{2} b \left(48 a^2-28 a b+5 b^2+4 (9 a-2 b) b \text{Cosh}[2 (e+f x)]+3 b^2 \text{Cosh}[4 (e+f x)]\right) \text{Sinh}[2 (e+f x)]\right) \Big/ \left(240 b f \sqrt{2 a-b+b \text{Cosh}[2 (e+f x)]}\right)$$

Problem 371: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 210 leaves, 6 steps):

$$\left((a-2b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Bigg/\left(f\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)+$$
$$\left(b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Bigg/\left(f\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)-$$
$$\frac{(a-2b)\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,\text{Tanh}[e+fx]}{f}+\frac{(a-b)\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,\text{Tanh}[e+fx]}{f}$$

Result (type 4, 160 leaves):

$$\left(2\,i\,a\,(a-2b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticE}\left[i(e+fx),\frac{b}{a}\right]+\right.$$
$$(a-b)\left(-2\,i\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]+\right.$$
$$\left.\left.\sqrt{2}\,(2a-b+b\,\text{Cosh}[2(e+fx)])\,\text{Tanh}[e+fx]\right)\right)\Bigg/\left(2f\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\right)$$

Problem 372: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sech}[e+fx]^4\left(a+b\,\text{Sinh}[e+fx]^2\right)^{3/2}dx$$

Optimal (type 4, 193 leaves, 5 steps):

$$\left(2\,(a+b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)-\left(b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\frac{(a-b)\,\text{Sech}[e+f\,x]^2\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{3\,f}$$

Result (type 4, 197 leaves):

$$\left(4\,i\,a\,(a+b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticE}\left[i\,(e+f\,x),\,\frac{b}{a}\right]-2\,i\,a\,(2\,a+b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[i\,(e+f\,x),\,\frac{b}{a}\right]+\frac{1}{\sqrt{2}}\left(8\,a^2-3\,a\,b+b^2+\left(4\,a^2+6\,a\,b-2\,b^2\right)\,\text{Cosh}[2\,(e+f\,x)]+b\,(a+b)\,\text{Cosh}[4\,(e+f\,x)]\right)\,\text{Sech}[e+f\,x]^2\,\text{Tanh}[e+f\,x]\right)\Big/\left(6\,f\,\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}\right)$$

Problem 377: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Cosh}[e+f\,x]^4}{\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}\,dx$$

Optimal (type 4, 241 leaves, 6 steps):

$$\frac{\text{Cosh}[e+f x] \, \text{Sinh}[e+f x] \sqrt{a+b \, \text{Sinh}[e+f x]^2}}{3 b f}+\left(2 (a-2 b) \, \text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]], 1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b \, \text{Sinh}[e+f x]^2}\right) \Big/ \left(3 b^2 f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b \, \text{Sinh}[e+f x]^2\right)}{a}}\right)-\left((a-3 b) \, \text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]], 1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b \, \text{Sinh}[e+f x]^2}\right) \Big/ \left(3 a b f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b \, \text{Sinh}[e+f x]^2\right)}{a}}\right)-\frac{2 (a-2 b) \sqrt{a+b \, \text{Sinh}[e+f x]^2} \, \text{Tanh}[e+f x]}{3 b^2 f}$$

Result (type 4, 179 leaves):

$$\left(4 \, i \sqrt{2} \, a (a-2 b) \sqrt{\frac{2 a-b+b \, \text{Cosh}[2 (e+f x)]}{a}} \, \text{EllipticE}\left[i (e+f x), \frac{b}{a}\right]-2 \, i \sqrt{2} \left(2 a^2-5 a b+3 b^2\right) \sqrt{\frac{2 a-b+b \, \text{Cosh}[2 (e+f x)]}{a}} \, \text{EllipticF}\left[i (e+f x), \frac{b}{a}\right]+b (2 a-b+b \, \text{Cosh}[2 (e+f x)]) \, \text{Sinh}[2 (e+f x)]\right) \Big/ \left(6 b^2 f \sqrt{4 a-2 b+2 b \, \text{Cosh}[2 (e+f x)]}\right)$$

Problem 378: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 177 leaves, 5 steps):

$$-\left(\left(\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]], 1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b \, \text{Sinh}[e+f x]^2}\right) \Big/ \left(b f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b \, \text{Sinh}[e+f x]^2\right)}{a}}\right)\right)+\left(\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]], 1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b \, \text{Sinh}[e+f x]^2}\right) \Big/ \left(a f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b \, \text{Sinh}[e+f x]^2\right)}{a}}\right)+\frac{\sqrt{a+b \, \text{Sinh}[e+f x]^2} \, \text{Tanh}[e+f x]}{b f}$$

Result (type 4, 95 leaves) :

$$-\left(\left(\mathrm{i}\sqrt{\frac{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}{a}}\left(a\,\mathrm{EllipticE}\left[\mathrm{i}(e+fx),\frac{b}{a}\right]+(-a+b)\,\mathrm{EllipticF}\left[\mathrm{i}(e+fx),\frac{b}{a}\right]\right)\right)\Big/\left(b\,f\sqrt{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}\right)\right)$$

Problem 380: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 160 leaves, 7 steps) :

$$\left(\mathrm{EllipticE}\left[\mathrm{ArcTan}[\mathrm{Sinh}[e+fx]],1-\frac{b}{a}\right]\mathrm{Sech}[e+fx]\sqrt{a+b\,\mathrm{Sinh}[e+fx]^2}\right)\Big/\left((a-b)\,f\sqrt{\frac{\mathrm{Sech}[e+fx]^2\left(a+b\,\mathrm{Sinh}[e+fx]^2\right)}{a}}\right)-\left(b\,\mathrm{EllipticF}\left[\mathrm{ArcTan}[\mathrm{Sinh}[e+fx]],1-\frac{b}{a}\right]\mathrm{Sech}[e+fx]\sqrt{a+b\,\mathrm{Sinh}[e+fx]^2}\right)\Big/\left(a(a-b)\,f\sqrt{\frac{\mathrm{Sech}[e+fx]^2\left(a+b\,\mathrm{Sinh}[e+fx]^2\right)}{a}}\right)$$

Result (type 4, 159 leaves) :

$$\left(2\,\mathrm{i}\,a\sqrt{\frac{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}{a}}\,\mathrm{EllipticE}\left[\mathrm{i}(e+fx),\frac{b}{a}\right]-2\,\mathrm{i}\,(a-b)\sqrt{\frac{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}{a}}\,\mathrm{EllipticF}\left[\mathrm{i}(e+fx),\frac{b}{a}\right]+\sqrt{2}\,(2a-b+b\,\mathrm{Cosh}[2(e+fx)])\,\mathrm{Tanh}[e+fx]\right)\Big/\left(2(a-b)\,f\sqrt{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}\right)$$

Problem 381: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sech}[e+f x]^4}{\sqrt{a+b\,\text{Sinh}[e+f x]^2}}\,dx$$

Optimal (type 4, 219 leaves, 5 steps):

$$\left(2\,(a-2\,b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3\,(a-b)^2\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)-\left((a-3\,b)\,b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3\,a\,(a-b)^2\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\frac{\text{Sech}[e+f x]^2\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{3\,(a-b)\,f}$$

Result (type 4, 219 leaves):

$$\left(4\,i\,a\,(a-2\,b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticE}\left[i\,(e+f x),\,\frac{b}{a}\right]-2\,i\,\left(2\,a^2-5\,a\,b+3\,b^2\right)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticF}\left[i\,(e+f x),\,\frac{b}{a}\right]+\frac{1}{\sqrt{2}}\left(8\,a^2-15\,a\,b+4\,b^2+\left(4\,a^2-6\,a\,b-2\,b^2\right)\,\text{Cosh}[2\,(e+f x)]+(a-2\,b)\,b\,\text{Cosh}[4\,(e+f x)]\right)\,\text{Sech}[e+f x]^2\,\text{Tanh}[e+f x]\right)\Big/\left(6\,(a-b)^2\,f\,\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f x)]}\right)$$

Problem 386: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cosh}[e+f x]^6}{\left(a+b\,\text{Sinh}[e+f x]^2\right)^{3/2}}\,dx$$

Optimal (type 4, 325 leaves, 7 steps):

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

$$\left(\left(8 a^2-13 a b+3 b^2\right)\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\right.$$

$$\left.\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3\,a\,b^3\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)-$$

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

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

$$\frac{\left(8 a^2-13 a b+3 b^2\right)\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{3\,a\,b^3\,f}$$

Result (type 4, 196 leaves):

$$\left(4\,i\,a\left(8 a^2-13 a b+3 b^2\right)\sqrt{\frac{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticE}\left[i\,(e+f x),\frac{b}{a}\right]-\right.$$

$$4\,i\,a\left(8 a^2-17 a b+9 b^2\right)\sqrt{\frac{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticF}\left[i\,(e+f x),\frac{b}{a}\right]+$$

$$\left.\sqrt{2}\,b\left(8 a^2-13 a b+6 b^2+a b\,\text{Cosh}[2\,(e+f x)]\right)\text{Sinh}[2\,(e+f x)]\right)\Big/$$

$$\left(12\,a\,b^3\,f\,\sqrt{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}\right)$$

Problem 387: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Cosh}[e+f x]^4}{\left(a+b\,\text{Sinh}[e+f x]^2\right)^{3/2}}\,dx$$

Optimal (type 4, 244 leaves, 6 steps):

$$-\frac{(a-b)\,\text{Cosh}[e+f x]\,\text{Sinh}[e+f x]}{a\,b\,f\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}}-\left((2a-b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(a\,b^2\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,(a+b\,\text{Sinh}[e+f x]^2)}{a}}\right)+\left(\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(a\,b\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,(a+b\,\text{Sinh}[e+f x]^2)}{a}}\right)+\frac{(2a-b)\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{a\,b^2\,f}$$

Result (type 4, 155 leaves) :

$$\left(-2\,i\,a\,(2a-b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticE}\left[i\,(e+f x),\frac{b}{a}\right]+(a-b)\left(4\,i\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticF}\left[i\,(e+f x),\frac{b}{a}\right]-\sqrt{2}\,b\,\text{Sinh}[2\,(e+f x)]\right)\right)\Big/\left(2\,a\,b^2\,f\,\sqrt{2a-b+b\,\text{Cosh}[2\,(e+f x)]}\right)$$

Problem 388: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 91 leaves, 2 steps) :

$$\frac{\text{Cosh}[e+f x]\,\text{EllipticE}\left[\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sinh}[e+f x]}{\sqrt{a}}\right],1-\frac{a}{b}\right]}{\sqrt{a}\,\sqrt{b}\,f\,\sqrt{\frac{a\,\text{Cosh}[e+f x]^2}{a+b\,\text{Sinh}[e+f x]^2}}\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}}$$

Result (type 4, 143 leaves) :

$$\left(i\sqrt{2}\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticE}\left[i(e+fx),\frac{b}{a}\right]-i\sqrt{2}\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]+b\,\text{Sinh}[2(e+fx)]\right)\Big/\left(a\,b\,f\sqrt{4a-2b+2b\,\text{Cosh}[2(e+fx)]}\right)$$

Problem 390: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 217 leaves, 5 steps):

$$\frac{\sqrt{b}\,(a+b)\,\text{Cosh}[e+fx]\,\text{EllipticE}\left[\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sinh}[e+fx]}{\sqrt{a}}\right],1-\frac{a}{b}\right]}{\sqrt{a}\,(a-b)^2 f\sqrt{\frac{a\,\text{Cosh}[e+fx]^2}{a+b\,\text{Sinh}[e+fx]^2}}\sqrt{a+b\,\text{Sinh}[e+fx]^2}}-\left(2\,b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Big/\left(a\,(a-b)^2 f\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)+\frac{\text{Tanh}[e+fx]}{(a-b)\,f\sqrt{a+b\,\text{Sinh}[e+fx]^2}}$$

Result (type 4, 178 leaves):

$$\left(i\sqrt{2}\,a\,(a+b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticE}\left[i(e+fx),\frac{b}{a}\right]-i\sqrt{2}\,a\,(a-b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]+\left(2a^2-ab+b^2+b\,(a+b)\,\text{Cosh}[2(e+fx)]\right)\text{Tanh}[e+fx]\right)\Big/\left(a\,(a-b)^2 f\sqrt{4a-2b+2b\,\text{Cosh}[2(e+fx)]}\right)$$

Problem 395: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Cosh}[e+fx]^6}{\left(a+b\,\text{Sinh}[e+fx]^2\right)^{5/2}}\,dx$$

Optimal (type 4, 330 leaves, 7 steps):

$$-\frac{(a-b)\,\text{Cosh}[e+f x]^3\,\text{Sinh}[e+f x]}{3 a b f\,\left(a+b\,\text{Sinh}[e+f x]^2\right)^{3/2}}-\frac{2\,(a-b)\,(2 a+b)\,\text{Cosh}[e+f x]\,\text{Sinh}[e+f x]}{3 a^2 b^2 f\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}}-\left(\left(8 a^2-3 a b-2 b^2\right)\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3 a^2 b^3 f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\left((4 a-b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3 a^2 b^2 f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\frac{\left(8 a^2-3 a b-2 b^2\right)\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{3 a^2 b^3 f}$$

Result (type 4, 206 leaves):

$$\left(-2\,i\,a^2\left(8 a^2-3 a b-2 b^2\right)\left(\frac{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}\right)^{3/2}\text{EllipticE}\left[i\,(e+f x),\frac{b}{a}\right]+\frac{1}{2}\,(a-b)\left(4\,i\,a^2\,(8 a+b)\left(\frac{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}\right)^{3/2}\text{EllipticF}\left[i\,(e+f x),\frac{b}{a}\right]-2\sqrt{2}\,b\left(8 a^2+a b-2 b^2+b\,(5 a+2 b)\,\text{Cosh}[2\,(e+f x)]\right)\text{Sinh}[2\,(e+f x)]\right)\right)\Big/\left(6 a^2 b^3 f\,\left(2 a-b+b\,\text{Cosh}[2\,(e+f x)]\right)^{3/2}\right)$$

Problem 396: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cosh}[e+f x]^4}{\left(a+b\,\text{Sinh}[e+f x]^2\right)^{5/2}}\,dx$$

Optimal (type 4, 223 leaves, 5 steps):

$$-\frac{(a-b)\,\text{Cosh}[e+f x]\,\text{Sinh}[e+f x]}{3\,a\,b\,f\,\left(a+b\,\text{Sinh}[e+f x]^2\right)^{3/2}}+\frac{2\,(a+b)\,\text{Cosh}[e+f x]\,\text{EllipticE}\left[\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sinh}[e+f x]}{\sqrt{a}}\right],1-\frac{a}{b}\right]}{3\,a^{3/2}\,b^{3/2}\,f\,\sqrt{\frac{a\,\text{Cosh}[e+f x]^2}{a+b\,\text{Sinh}[e+f x]^2}}\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}}-\left(\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3\,a^2\,b\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)$$

Result (type 4, 178 leaves):

$$\left(2\,i\,a^2\,(a+b)\left(\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}\right)^{3/2}\text{EllipticE}\left[i\,(e+f x),\frac{b}{a}\right]-i\,a^2\,(2\,a+b)\left(\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}\right)^{3/2}\text{EllipticF}\left[i\,(e+f x),\frac{b}{a}\right]+\sqrt{2}\,b\,\left(a^2+2\,a\,b-b^2+b\,(a+b)\,\text{Cosh}[2\,(e+f x)]\right)\text{Sinh}[2\,(e+f x)]\right)\Big/\left(3\,a^2\,b^2\,f\,\left(2\,a-b+b\,\text{Cosh}[2\,(e+f x)]\right)^{3/2}\right)$$

Problem 397: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 228 leaves, 5 steps):

$$\frac{\text{Cosh}[e+f x]\,\text{Sinh}[e+f x]}{3\,a\,f\,\left(a+b\,\text{Sinh}[e+f x]^2\right)^{3/2}}+\frac{(a-2\,b)\,\text{Cosh}[e+f x]\,\text{EllipticE}\left[\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sinh}[e+f x]}{\sqrt{a}}\right],1-\frac{a}{b}\right]}{3\,a^{3/2}\,(a-b)\,\sqrt{b}\,f\,\sqrt{\frac{a\,\text{Cosh}[e+f x]^2}{a+b\,\text{Sinh}[e+f x]^2}}\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}}+\left(\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3\,a^2\,(a-b)\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)$$

Result (type 4, 193 leaves):

$$\left(2\,i\,a^2\,(a-2\,b)\,\left(\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}\right)^{3/2}\,\text{EllipticE}\left[i\,(e+f\,x),\,\frac{b}{a}\right]-\right.$$
$$2\,i\,a^2\,(a-b)\,\left(\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}\right)^{3/2}\,\text{EllipticF}\left[i\,(e+f\,x),\,\frac{b}{a}\right]-$$
$$\left.\sqrt{2}\,b\,\left(-4\,a^2+7\,a\,b-2\,b^2-(a-2\,b)\,b\,\text{Cosh}[2\,(e+f\,x)]\right)\,\text{Sinh}[2\,(e+f\,x)]\right)\Big/$$
$$\left(6\,a^2\,(a-b)\,b\,f\,(2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)])^{3/2}\right)$$

Problem 399: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 292 leaves, 6 steps):

$$\frac{b\,(3\,a+b)\,\text{Cosh}[e+f\,x]\,\text{Sinh}[e+f\,x]}{3\,a\,(a-b)^2\,f\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}}+$$
$$\left(\sqrt{b}\,\left(3\,a^2+7\,a\,b-2\,b^2\right)\,\text{Cosh}[e+f\,x]\,\text{EllipticE}\left[\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sinh}[e+f\,x]}{\sqrt{a}}\right],\,1-\frac{a}{b}\right]\right)\Big/$$
$$\left(3\,a^{3/2}\,(a-b)^3\,f\,\sqrt{\frac{a\,\text{Cosh}[e+f\,x]^2}{a+b\,\text{Sinh}[e+f\,x]^2}}\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)-$$
$$\left((9\,a-b)\,b\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/$$
$$\left(3\,a^2\,(a-b)^3\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\frac{\text{Tanh}[e+f\,x]}{(a-b)\,f\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}}$$

Result (type 4, 468 leaves):

$$-\frac{1}{3 a^2 (a-b)^3 f} b \left(-\left(\left(\left(\mathrm{i} \left(\frac{15 a^2}{\sqrt{2}}-\frac{9 a b}{\sqrt{2}}+\sqrt{2} b^2\right) \sqrt{\frac{2 a-b+b \operatorname{Cosh}[2 (e+f x)]}{a}} \operatorname{EllipticF}\left[\mathrm{i} (e+f x), \frac{b}{a}\right]\right) \Big/ \left(\sqrt{2} \sqrt{2 a-b+b \operatorname{Cosh}[2 (e+f x)]}\right)\right)-\frac{1}{2 b} \mathrm{i} \left(\frac{3 a^2}{\sqrt{2}}+\frac{7 a b}{\sqrt{2}}-\sqrt{2} b^2\right) \left(\frac{2 \sqrt{2} a \sqrt{\frac{2 a-b+b \operatorname{Cosh}[2 (e+f x)]}{a}} \operatorname{EllipticE}\left[\mathrm{i} (e+f x), \frac{b}{a}\right]}{\sqrt{2 a-b+b \operatorname{Cosh}[2 (e+f x)]}}-\frac{\sqrt{2} (2 a-b) \sqrt{\frac{2 a-b+b \operatorname{Cosh}[2 (e+f x)]}{a}} \operatorname{EllipticF}\left[\mathrm{i} (e+f x), \frac{b}{a}\right]}{\sqrt{2 a-b+b \operatorname{Cosh}[2 (e+f x)]}}\right)\right)+$$

$$\frac{1}{f}\sqrt{2 a-b+b \operatorname{Cosh}[2 (e+f x)]} \left(\frac{\sqrt{2} b^2 \operatorname{Sinh}[2 (e+f x)]}{3 a (a-b)^2 (2 a-b+b \operatorname{Cosh}[2 (e+f x)])^2}+\frac{7 \sqrt{2} a b^2 \operatorname{Sinh}[2 (e+f x)]-2 \sqrt{2} b^3 \operatorname{Sinh}[2 (e+f x)]}{6 a^2 (a-b)^3 (2 a-b+b \operatorname{Cosh}[2 (e+f x)])}+\frac{\operatorname{Tanh}[e+f x]}{\sqrt{2} (a-b)^3}\right)$$

Problem 400: Unable to integrate problem.

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

Optimal (type 6, 117 leaves, 3 steps):

$$\frac{1}{f} d \operatorname{AppellF1}\left[\frac{1}{2}, \frac{1-m}{2}, -p, \frac{3}{2}, -\operatorname{Sinh}[e+f x]^2, -\frac{b \operatorname{Sinh}[e+f x]^2}{a}\right] (d \operatorname{Cosh}[e+f x])^{-1+m} \left(\operatorname{Cosh}[e+f x]^2\right)^{\frac{1-m}{2}} \operatorname{Sinh}[e+f x] \left(a+b \operatorname{Sinh}[e+f x]^2\right)^p \left(1+\frac{b \operatorname{Sinh}[e+f x]^2}{a}\right)^{-p}$$

Result (type 8, 27 leaves):

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

Problem 401: Unable to integrate problem.

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

Optimal (type 5, 214 leaves, 5 steps):

$$-\frac{(3 a-b (7+2 p)) \,\text{Sinh}[e+f x] \left(a+b \,\text{Sinh}[e+f x]^2\right)^{1+p}}{b^2 f (3+2 p) (5+2 p)}+\frac{\text{Cosh}[e+f x]^2 \,\text{Sinh}[e+f x] \left(a+b \,\text{Sinh}[e+f x]^2\right)^{1+p}}{b f (5+2 p)}+$$
$$\left(\left(3 a^2-2 a b (5+2 p)+b^2 \left(15+16 p+4 p^2\right)\right) \text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b \,\text{Sinh}[e+f x]^2}{a}\right]\right.$$
$$\left.\text{Sinh}[e+f x] \left(a+b \,\text{Sinh}[e+f x]^2\right)^p \left(1+\frac{b \,\text{Sinh}[e+f x]^2}{a}\right)^{-p}\right) \Big/ \left(b^2 f (3+2 p) (5+2 p)\right)$$

Result (type 8, 25 leaves):

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

Problem 402: Unable to integrate problem.

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

Optimal (type 5, 125 leaves, 4 steps):

$$\frac{\text{Sinh}[e+f x] \left(a+b \,\text{Sinh}[e+f x]^2\right)^{1+p}}{b f (3+2 p)}-\frac{1}{b f (3+2 p)}$$
$$(a-b (3+2 p)) \,\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b \,\text{Sinh}[e+f x]^2}{a}\right]$$
$$\text{Sinh}[e+f x] \left(a+b \,\text{Sinh}[e+f x]^2\right)^p \left(1+\frac{b \,\text{Sinh}[e+f x]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

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

Problem 404: Unable to integrate problem.

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

Optimal (type 6, 78 leaves, 3 steps):

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

Result (type 8, 23 leaves):

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

Problem 405: Unable to integrate problem.

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

Optimal (type 6, 78 leaves, 3 steps):

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

Result (type 8, 25 leaves):

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

Problem 406: Unable to integrate problem.

$$\int \text{Cosh}[e+f x]^4\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 92 leaves, 3 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2},-p,\frac{3}{2},-\text{Sinh}[e+f x]^2,-\frac{b\,\text{Sinh}[e+f x]^2}{a}\right]\sqrt{\text{Cosh}[e+f x]^2}\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Sinh}[e+f x]^2}{a}\right)^{-p}\text{Tanh}[e+f x]$$

Result (type 8, 25 leaves):

$$\int \text{Cosh}[e+f x]^4\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\,dx$$

Problem 407: Unable to integrate problem.

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

Optimal (type 6, 92 leaves, 3 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Sinh}[e+f x]^2,-\frac{b\,\text{Sinh}[e+f x]^2}{a}\right]\sqrt{\text{Cosh}[e+f x]^2}\,\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Sinh}[e+f x]^2}{a}\right)^{-p}\text{Tanh}[e+f x]$$

Result (type 8, 25 leaves) :

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

Problem 408: Unable to integrate problem.

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

Optimal (type 6, 92 leaves, 3 steps) :

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-p,\frac{3}{2},-\text{Sinh}[e+f x]^2,-\frac{b\,\text{Sinh}[e+f x]^2}{a}\right]\sqrt{\text{Cosh}[e+f x]^2}\,\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Sinh}[e+f x]^2}{a}\right)^{-p}\text{Tanh}[e+f x]$$

Result (type 8, 16 leaves) :

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

Problem 409: Unable to integrate problem.

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

Optimal (type 6, 92 leaves, 3 steps) :

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},\frac{3}{2},-p,\frac{3}{2},-\text{Sinh}[e+f x]^2,-\frac{b\,\text{Sinh}[e+f x]^2}{a}\right]\sqrt{\text{Cosh}[e+f x]^2}\,\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Sinh}[e+f x]^2}{a}\right)^{-p}\text{Tanh}[e+f x]$$

Result (type 8, 25 leaves) :

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

Problem 410: Unable to integrate problem.

$$\int \text{Sech}[e+f x]^4\,\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 92 leaves, 3 steps) :

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Sinh}[e+f x]^2,-\frac{b\,\text{Sinh}[e+f x]^2}{a}\right]$$
$$\sqrt{\text{Cosh}[e+f x]^2}\,\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Sinh}[e+f x]^2}{a}\right)^{-p}\text{Tanh}[e+f x]$$

Result (type 8, 25 leaves):

$$\int \text{Sech}[e+f x]^4\left(a+b\,\text{Sinh}[e+f x]^2\right)^p\,dx$$

Problem 412: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cosh}[c+d x]^3}{a+b\sqrt{\text{Sinh}[c+d x]}}\,dx$$

Optimal (type 3, 136 leaves, 4 steps):

$$-\frac{2a\left(a^4+b^4\right)\text{Log}\left[a+b\sqrt{\text{Sinh}[c+d x]}\right]}{b^6 d}+\frac{2\left(a^4+b^4\right)\sqrt{\text{Sinh}[c+d x]}}{b^5 d}-\frac{a^3\,\text{Sinh}[c+d x]}{b^4 d}+\frac{2a^2\,\text{Sinh}[c+d x]^{3/2}}{3b^3 d}-\frac{a\,\text{Sinh}[c+d x]^2}{2b^2 d}+\frac{2\,\text{Sinh}[c+d x]^{5/2}}{5 b d}$$

Result (type 3, 311 leaves):

$$-\frac{a\,\text{Cosh}\left[2\left(c+d x\right)\right]}{4b^2 d}+\frac{\left(-a^5-a b^4\right)\text{Log}\left[a^2-b^2\,\text{Sinh}[c+d x]\right]}{b^6 d}-\frac{a^3\,\text{Sinh}[c+d x]}{b^4 d}+\frac{\sqrt{\text{Sinh}[c+d x]}\left(\frac{\text{Cosh}[2(c+d x)]}{5b}+\frac{2a^2\,\text{Sinh}[c+d x]}{3b^3}\right)}{d}-\frac{1}{20b^3 d}$$
$$\left(-\left(\left(4ab\,\text{ArcTanh}\left[\frac{b\sqrt{\text{Sinh}[c+d x]}}{a}\right]\text{Cosh}[c+d x]^2\left(-a^2+b^2\,\text{Sinh}[c+d x]\right)\right)\Big/\right.\right.$$
$$\left.\left(\left(a^2-b^2\,\text{Sinh}[c+d x]\right)\left(1+\text{Sinh}[c+d x]^2\right)\right)\right)-$$
$$\left(2\left(10a^4+9b^4\right)\text{Coth}[c+d x]\left(\frac{a\,\text{ArcTanh}\left[\frac{b\sqrt{\text{Sinh}[c+d x]}}{a}\right]}{b^3}-\frac{\sqrt{\text{Sinh}[c+d x]}}{b^2}\right)\right.$$
$$\left.\left.\left(-a^2+b^2\,\text{Sinh}[c+d x]\right)\text{Sinh}\left[2\left(c+d x\right)\right]\right)\Big/\left(\left(a^2-b^2\,\text{Sinh}[c+d x]\right)\left(1+\text{Sinh}[c+d x]^2\right)\right)\right)$$

Problem 418: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 384 leaves, 19 steps):

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

Result (type 3, 708 leaves):

$$\frac{1}{2d}\left(\frac{2\sqrt{2}\,a^3 b\left(a^2-b^2\right)\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Sinh}[c+d x]}\right]}{\left(a^4+b^4\right)^2}-\frac{2\sqrt{2}\,a b^3\left(a^2+b^2\right)\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Sinh}[c+d x]}\right]}{\left(a^4+b^4\right)^2}-\frac{2\sqrt{2}\,a^3 b\left(a^2-b^2\right)\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Sinh}[c+d x]}\right]}{\left(a^4+b^4\right)^2}+\frac{2\sqrt{2}\,a b^3\left(a^2+b^2\right)\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Sinh}[c+d x]}\right]}{\left(a^4+b^4\right)^2}+\frac{2\left(a^2-i b^2\right)\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}(c+d x)\right]\right]}{\left(a^2+i b^2\right)^2}+\frac{2\left(a^2+i b^2\right)\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}(c+d x)\right]\right]}{\left(a^2-i b^2\right)^2}-\frac{10 a^4 b^2\,\text{ArcTanh}\left[\frac{b\sqrt{\text{Sinh}[c+d x]}}{a}\right]}{\left(a^4+b^4\right)^2}+\frac{6 b^6\,\text{ArcTanh}\left[\frac{b\sqrt{\text{Sinh}[c+d x]}}{a}\right]}{\left(a^4+b^4\right)^2}-\frac{2 b^2\,\text{ArcTanh}\left[\frac{b\sqrt{\text{Sinh}[c+d x]}}{a}\right]}{a^4+b^4}+\frac{\left(-i a^2+b^2\right)\text{Log}[\text{Cosh}[c+d x]]}{\left(a^2-i b^2\right)^2}+\frac{\left(i a^2+b^2\right)\text{Log}[\text{Cosh}[c+d x]]}{\left(a^2+i b^2\right)^2}-\frac{1}{\left(a^4+b^4\right)^2}\sqrt{2}\,a b^3\left(a^2-b^2\right)\left(\text{Log}\left[1-\sqrt{2}\sqrt{\text{Sinh}[c+d x]}+\text{Sinh}[c+d x]\right]-\text{Log}\left[1+\sqrt{2}\sqrt{\text{Sinh}[c+d x]}+\text{Sinh}[c+d x]\right]\right)-\frac{1}{\left(a^4+b^4\right)^2}\sqrt{2}\,a^3 b\left(a^2+b^2\right)\left(\text{Log}\left[1-\sqrt{2}\sqrt{\text{Sinh}[c+d x]}+\text{Sinh}[c+d x]\right]-\text{Log}\left[1+\sqrt{2}\sqrt{\text{Sinh}[c+d x]}+\text{Sinh}[c+d x]\right]\right)+\frac{2\left(-3 a^4 b^2+b^6\right)\text{Log}\left[a^2-b^2\,\text{Sinh}[c+d x]\right]}{\left(a^4+b^4\right)^2}+\frac{4 a^2 b^2}{\left(a^4+b^4\right)\left(a^2-b^2\,\text{Sinh}[c+d x]\right)}-\frac{4 a b^3\sqrt{\text{Sinh}[c+d x]}}{\left(a^4+b^4\right)\left(a^2-b^2\,\text{Sinh}[c+d x]\right)}\right)$$

Problem 419: Unable to integrate problem.

$$\int\frac{\text{Cosh}[c+d x]^5}{a+b\,\text{Sinh}[c+d x]^n}\,dx$$

Optimal (type 5, 130 leaves, 6 steps):

$$\frac{\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{b\,\text{Sinh}[c+d x]^n}{a}\right]\text{Sinh}[c+d x]}{a d}+\frac{2\,\text{Hypergeometric2F1}\left[1,\frac{3}{n},\frac{3+n}{n},-\frac{b\,\text{Sinh}[c+d x]^n}{a}\right]\text{Sinh}[c+d x]^3}{3 a d}+\frac{\text{Hypergeometric2F1}\left[1,\frac{5}{n},\frac{5+n}{n},-\frac{b\,\text{Sinh}[c+d x]^n}{a}\right]\text{Sinh}[c+d x]^5}{5 a d}$$

Result (type 8, 25 leaves):

$$\int \frac{\text{Cosh}[c+d\,x]^5}{a+b\,\text{Sinh}[c+d\,x]^n}\,dx$$

Problem 420: Unable to integrate problem.

$$\int \frac{\text{Cosh}[c+d\,x]^3}{a+b\,\text{Sinh}[c+d\,x]^n}\,dx$$

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

$$\frac{\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{b\,\text{Sinh}[c+d\,x]^n}{a}\right]\text{Sinh}[c+d\,x]}{a\,d}+\frac{\text{Hypergeometric2F1}\left[1,\frac{3}{n},\frac{3+n}{n},-\frac{b\,\text{Sinh}[c+d\,x]^n}{a}\right]\text{Sinh}[c+d\,x]^3}{3\,a\,d}$$

Result (type 8, 25 leaves):

$$\int \frac{\text{Cosh}[c+d\,x]^3}{a+b\,\text{Sinh}[c+d\,x]^n}\,dx$$

Problem 422: Attempted integration timed out after 120 seconds.

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

Optimal (type 5, 130 leaves, 6 steps):

$$\frac{\text{Hypergeometric2F1}\left[2,\frac{1}{n},1+\frac{1}{n},-\frac{b\,\text{Sinh}[c+d\,x]^n}{a}\right]\text{Sinh}[c+d\,x]}{a^2\,d}+\frac{2\,\text{Hypergeometric2F1}\left[2,\frac{3}{n},\frac{3+n}{n},-\frac{b\,\text{Sinh}[c+d\,x]^n}{a}\right]\text{Sinh}[c+d\,x]^3}{3\,a^2\,d}+\frac{\text{Hypergeometric2F1}\left[2,\frac{5}{n},\frac{5+n}{n},-\frac{b\,\text{Sinh}[c+d\,x]^n}{a}\right]\text{Sinh}[c+d\,x]^5}{5\,a^2\,d}$$

Result (type 1, 1 leaves):

???

Problem 423: Attempted integration timed out after 120 seconds.

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

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

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

Result (type 1, 1 leaves):

???

Problem 457: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 187 leaves, 6 steps):

$$-\frac{\left(8\,a^2-24\,a\,b+15\,b^2\right)\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{\sqrt{a-b}}\right]}{8\,(a-b)^{3/2}\,f}+\frac{\left(8\,a^2-24\,a\,b+15\,b^2\right)\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{8\,(a-b)^2\,f}+\frac{(8\,a-7\,b)\,\text{Sech}[e+f\,x]^2\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}}{8\,(a-b)^2\,f}-\frac{\text{Sech}[e+f\,x]^4\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}}{4\,(a-b)\,f}$$

Result (type 3, 631 leaves):

$$\frac{\sqrt{2a-b+b\,\text{Cosh}[2\,(e+f\,x)]}\,\left(\frac{(8a-9b)\,\text{Sech}[e+f\,x]^2}{8\sqrt{2}\,(a-b)}-\frac{\text{Sech}[e+f\,x]^4}{4\sqrt{2}}\right)}{f}+\frac{1}{4\,(a-b)\,f}$$

$$\left(-\frac{1}{\sqrt{2a-2b}}\left(4\sqrt{2}\,a^2-\frac{a\,b}{\sqrt{2}}-11\sqrt{2}\,a\,b+7\sqrt{2}\,b^2\right)\text{ArcTanh}\left[\frac{\sqrt{2a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}{\sqrt{2a-2b}}\right]+\right.$$

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

$$\left.\sqrt{\left(a-2\,a\,\text{Tanh}\left[\frac{1}{2}(e+f\,x)\right]^2+4\,b\,\text{Tanh}\left[\frac{1}{2}(e+f\,x)\right]^2+a\,\text{Tanh}\left[\frac{1}{2}(e+f\,x)\right]^4\right)}\right)\Big/$$

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

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

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

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

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

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

Problem 458: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 126 leaves, 5 steps):

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

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

Result (type 3, 523 leaves):

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

$$\frac{1}{2f}\left(-\frac{\left(2\sqrt{2}\,a-\frac{11b}{2\sqrt{2}}\right)\text{ArcTanh}\left[\frac{\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}}{\sqrt{2a-2b}}\right]}{\sqrt{2a-2b}}+\right.$$

$$\left(6b\,(1+\text{Cosh}[e+fx])\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{(1+\text{Cosh}[e+fx])^2}}\right.$$

$$\left.\sqrt{\left(a-2a\,\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2+4b\,\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2+a\,\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^4\right)}\right)\Big/$$

$$\left(\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\left(4b-4b\,\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)+$$

$$\frac{1}{4\sqrt{a-b}\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\left(-1+\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2\right)}$$

$$(1+\text{Cosh}[e+fx])\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{(1+\text{Cosh}[e+fx])^2}}\left(b\,\text{Log}\left[a-b-a\,\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2+\right.\right.$$

$$\left.b\,\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2+\sqrt{a-b}\sqrt{4b\,\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2+a\left(-1+\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2\right)^2}\right]$$

$$\left(-1+\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2\right)+\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(b-b\,\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2\right)-$$

$$\left.\left.2\sqrt{a-b}\sqrt{4b\,\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2+a\left(-1+\text{Tanh}\left[\frac{1}{2}(e+fx)\right]^2\right)^2}\right)\right)$$

Problem 463: Result unnecessarily involves imaginary or complex numbers.

$$\int\sqrt{a+b\,\text{Sinh}[e+fx]^2}\ \text{Tanh}[e+fx]^4\,dx$$

Optimal (type 4, 292 leaves, 7 steps):

$$-\left(\left((7a-8b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Bigg/\left(3(a-b)f\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)\right)+$$

$$\left((3a-4b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Bigg/\left(3(a-b)f\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)+$$

$$\frac{(7a-8b)\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,\text{Tanh}[e+fx]}{3(a-b)f}-\frac{(3a-4b)\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,\text{Tanh}[e+fx]}{3(a-b)f}-\frac{\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,\text{Tanh}[e+fx]^3}{3f}$$

Result (type 4, 214 leaves):

$$\left(-2\,i\,a(7a-8b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticE}\left[i(e+fx),\frac{b}{a}\right]+8\,i\,a(a-b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]-\frac{1}{2\sqrt{2}}\left(8a^2-12ab+b^2+4\left(4a^2-6ab+b^2\right)\text{Cosh}[2(e+fx)]+(4a-5b)\,b\,\text{Cosh}[4(e+fx)]\right)\text{Sech}[e+fx]^2\,\text{Tanh}[e+fx]\right)\Bigg/\left(6(a-b)f\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\right)$$

Problem 464: Result unnecessarily involves imaginary or complex numbers.

$$\int\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,\text{Tanh}[e+fx]^2\,dx$$

Optimal (type 4, 168 leaves, 6 steps):

$$-\left(\left(2\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(f\sqrt{\frac{\text{Sech}[e+f\,x]^2\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)\right)+\left(\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(f\sqrt{\frac{\text{Sech}[e+f\,x]^2\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\frac{\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{f}$$

Result (type 4, 150 leaves):

$$\left(-2\,i\sqrt{2}\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+f\,x)]}{a}}\,\text{EllipticE}\left[i(e+f\,x),\frac{b}{a}\right]+i\sqrt{2}\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+f\,x)]}{a}}\,\text{EllipticF}\left[i(e+f\,x),\frac{b}{a}\right]+(-2a+b-b\,\text{Cosh}[2(e+f\,x)])\,\text{Tanh}[e+f\,x]\right)\Big/\left(f\sqrt{4a-2b+2b\,\text{Cosh}[2(e+f\,x)]}\right)$$

Problem 466: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 202 leaves, 6 steps):

$$-\frac{\text{Coth}[e+f\,x]\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{f}-\left(2\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(f\sqrt{\frac{\text{Sech}[e+f\,x]^2\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\left((a+b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(a\,f\sqrt{\frac{\text{Sech}[e+f\,x]^2\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\frac{2\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{f}$$

Result (type 4, 154 leaves):

$$\left(\left(-2\,a+b-b\,\text{Cosh}[2\,(e+f\,x)]\right)\,\text{Coth}[e+f\,x]-2\,\mathrm{i}\,\sqrt{2}\,a\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticE}\left[\mathrm{i}\,(e+f\,x),\frac{b}{a}\right]+\mathrm{i}\,\sqrt{2}\,(a-b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[\mathrm{i}\,(e+f\,x),\frac{b}{a}\right]\right)\Big/\left(f\,\sqrt{4\,a-2\,b+2\,b\,\text{Cosh}[2\,(e+f\,x)]}\right)$$

Problem 467: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Coth}[e+f\,x]^4\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,dx$$

Optimal (type 4, 270 leaves, 7 steps):

$$-\frac{(3\,a+b)\,\text{Coth}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{3\,a\,f}-\frac{\text{Coth}[e+f\,x]^3\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{3\,f}-\left((7\,a+b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,a\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\left((3\,a+5\,b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,a\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\frac{(7\,a+b)\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{3\,a\,f}$$

Result (type 4, 376 leaves):

$$\frac{1}{f}\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\left(\frac{\left(-4\sqrt{2}\,a\,\text{Cosh}[e+fx]-\sqrt{2}\,b\,\text{Cosh}[e+fx]\right)\text{Csch}[e+fx]}{6a}-\frac{\text{Coth}[e+fx]\,\text{Csch}[e+fx]^2}{3\sqrt{2}}\right)+$$

$$\frac{1}{3af}\left(-\left(\left(i\left(3\sqrt{2}\,a^2+\frac{3ab}{\sqrt{2}}-\frac{b^2}{\sqrt{2}}\right)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]\right)\Big/\left(\sqrt{2}\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\right)\right)-\frac{1}{2b}\right.$$

$$\left.i\left(\frac{7ab}{\sqrt{2}}+\frac{b^2}{\sqrt{2}}\right)\left(\frac{2\sqrt{2}\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticE}\left[i(e+fx),\frac{b}{a}\right]}{\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}}-\frac{\sqrt{2}(2a-b)\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\,\text{EllipticF}\left[i(e+fx),\frac{b}{a}\right]}{\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}}\right)\right)$$

Problem 468: Result more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Sinh}[e+fx]^2\right)^{3/2}\text{Tanh}[e+fx]^5\,dx$$

Optimal (type 3, 232 leaves, 7 steps):

$$-\frac{\left(8a^2-40ab+35b^2\right)\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sinh}[e+fx]^2}}{\sqrt{a-b}}\right]}{8\sqrt{a-b}\,f}+$$

$$\frac{\left(8a^2-40ab+35b^2\right)\sqrt{a+b\,\text{Sinh}[e+fx]^2}}{8(a-b)f}+\frac{\left(8a^2-40ab+35b^2\right)\left(a+b\,\text{Sinh}[e+fx]^2\right)^{3/2}}{24(a-b)^2f}+$$

$$\frac{(8a-9b)\,\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)^{5/2}}{8(a-b)^2f}-\frac{\text{Sech}[e+fx]^4\left(a+b\,\text{Sinh}[e+fx]^2\right)^{5/2}}{4(a-b)f}$$

Result (type 3, 648 leaves):

$$\frac{1}{f}\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}$$

$$\left(\frac{b\,\text{Cosh}[2\,(e+f\,x)]}{6\,\sqrt{2}}+\frac{(8\,a-13\,b)\,\text{Sech}[e+f\,x]^2}{8\,\sqrt{2}}-\frac{(a-b)\,\text{Sech}[e+f\,x]^4}{4\,\sqrt{2}}\right)+\frac{1}{12\,f}\left(-\frac{1}{\sqrt{2\,a-2\,b}}\right.$$

$$\left(12\,\sqrt{2}\,a^2-58\,\sqrt{2}\,a\,b+\frac{19\,b^2}{2\,\sqrt{2}}+43\,\sqrt{2}\,b^2\right)\text{ArcTanh}\left[\frac{\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}{\sqrt{2\,a-2\,b}}\right]+$$

$$\left(4\,\sqrt{2}\,\left(6\,\sqrt{2}\,a\,b-\frac{57\,b^2}{2\,\sqrt{2}}\right)(1+\text{Cosh}[e+f\,x])\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{(1+\text{Cosh}[e+f\,x])^2}}\right.$$

$$\left.\sqrt{\left(a-2\,a\,\text{Tanh}\left[\frac{1}{2}\,(e+f\,x)\right]^2+4\,b\,\text{Tanh}\left[\frac{1}{2}\,(e+f\,x)\right]^2+a\,\text{Tanh}\left[\frac{1}{2}\,(e+f\,x)\right]^4\right)}\right)\Big/$$

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

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

$$\left(2\,\sqrt{2}\,a\,b-\frac{19\,b^2}{2\,\sqrt{2}}\right)(1+\text{Cosh}[e+f\,x])\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{(1+\text{Cosh}[e+f\,x])^2}}$$

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

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

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

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

Problem 469: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 156 leaves, 6 steps):

$$-\frac{(2a-5b)\sqrt{a-b}\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sinh}[e+f x]^2}}{\sqrt{a-b}}\right]}{2f}+\frac{(2a-5b)\sqrt{a+b\,\text{Sinh}[e+f x]^2}}{2f}+\frac{(2a-5b)\left(a+b\,\text{Sinh}[e+f x]^2\right)^{3/2}}{6(a-b)f}+\frac{\text{Sech}[e+f x]^2\left(a+b\,\text{Sinh}[e+f x]^2\right)^{5/2}}{2(a-b)f}$$

Result (type 3, 614 leaves):

$$\frac{\sqrt{2a-b+b\,\text{Cosh}[2(e+f x)]}\left(\frac{b\,\text{Cosh}[2(e+f x)]}{6\sqrt{2}}+\frac{(a-b)\,\text{Sech}[e+f x]^2}{2\sqrt{2}}\right)}{f}+\frac{1}{12 f}\left(-\frac{\left(12\sqrt{2}\,a^2-40\sqrt{2}\,a b+\frac{107 b^2}{2\sqrt{2}}\right)\text{ArcTanh}\left[\frac{\sqrt{2a-b+b\,\text{Cosh}[2(e+f x)]}}{\sqrt{2a-2b}}\right]}{\sqrt{2a-2b}}+\right.$$

$$\left(4\sqrt{2}\left(6\sqrt{2}\,a b-\frac{39 b^2}{2\sqrt{2}}\right)(1+\text{Cosh}[e+f x])\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+f x)]}{(1+\text{Cosh}[e+f x])^2}}\right.$$

$$\left.\sqrt{\left(a-2a\,\text{Tanh}\left[\frac{1}{2}(e+f x)\right]^2+4b\,\text{Tanh}\left[\frac{1}{2}(e+f x)\right]^2+a\,\text{Tanh}\left[\frac{1}{2}(e+f x)\right]^4\right)}\right)\Big/$$

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

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

$$\left(2\sqrt{2}\,a b-\frac{13 b^2}{2\sqrt{2}}\right)(1+\text{Cosh}[e+f x])\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+f x)]}{(1+\text{Cosh}[e+f x])^2}}$$

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

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

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

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

Problem 470: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 90 leaves, 5 steps):

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

Result (type 3, 590 leaves):

$$\frac{b\,\text{Cosh}[2\,(e+f\,x)]\,\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}{6\,\sqrt{2}\,f}+\frac{1}{12\,f}\left(-\frac{\left(12\,\sqrt{2}\,a^2-22\,\sqrt{2}\,a\,b+\frac{41\,b^2}{2\,\sqrt{2}}\right)\,\text{ArcTanh}\left[\frac{\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}{\sqrt{2\,a-2\,b}}\right]}{\sqrt{2\,a-2\,b}}+\right.$$

$$\left(4\,\sqrt{2}\,\left(6\,\sqrt{2}\,a\,b-\frac{21\,b^2}{2\,\sqrt{2}}\right)\,(1+\text{Cosh}[e+f\,x])\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{(1+\text{Cosh}[e+f\,x])^2}}\right.$$

$$\left.\sqrt{\left(a-2\,a\,\text{Tanh}\left[\frac{1}{2}\,(e+f\,x)\right]^2+4\,b\,\text{Tanh}\left[\frac{1}{2}\,(e+f\,x)\right]^2+a\,\text{Tanh}\left[\frac{1}{2}\,(e+f\,x)\right]^4\right)}\right)\Big/$$

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

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

$$\left(2\,\sqrt{2}\,a\,b-\frac{7\,b^2}{2\,\sqrt{2}}\right)\,(1+\text{Cosh}[e+f\,x])\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{(1+\text{Cosh}[e+f\,x])^2}}$$

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

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

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

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

Problem 474: Result unnecessarily involves imaginary or complex numbers.

$$\int \left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}\text{Tanh}[e+f\,x]^4\,dx$$

Optimal (type 4, 305 leaves, 8 steps):

$$-\frac{(3a-8b)\,\text{Cosh}[e+f\,x]\,\text{Sinh}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{3f}-\left(8\,(a-2b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3f\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\left((3a-8b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3f\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\frac{8\,(a-2b)\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{3f}+\frac{(a-2b)\,\text{Sinh}[e+f\,x]^2\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{f}-\frac{\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}\text{Tanh}[e+f\,x]^3}{3f}$$

Result (type 4, 224 leaves):

$$\left(-32\,i\,a\,(a-2b)\,\sqrt{\frac{2a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticE}\left[i\,(e+f\,x),\frac{b}{a}\right]+4\,i\,a\,(5a-8b)\,\sqrt{\frac{2a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[i\,(e+f\,x),\frac{b}{a}\right]-\frac{1}{4\sqrt{2}}\left(32a^2-108\,a\,b+18\,b^2+\left(64a^2-160\,a\,b+17\,b^2\right)\text{Cosh}[2\,(e+f\,x)]+2\,(6a-17b)\,b\,\text{Cosh}[4\,(e+f\,x)]-b^2\,\text{Cosh}[6\,(e+f\,x)]\right)\text{Sech}[e+f\,x]^2\,\text{Tanh}[e+f\,x]\right)\Big/\left(12f\sqrt{2a-b+b\,\text{Cosh}[2\,(e+f\,x)]}\right)$$

Problem 475: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 260 leaves, 7 steps):

$$\frac{4\,b\,\text{Cosh}[e+f\,x]\,\text{Sinh}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{3\,f}-$$
$$\left((7\,a-8\,b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/$$
$$\left(3\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+$$
$$\left((3\,a-4\,b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/$$
$$\left(3\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+$$
$$\frac{(7\,a-8\,b)\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{3\,f}-\frac{\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}\,\text{Tanh}[e+f\,x]}{f}$$

Result (type 4, 188 leaves):

$$\left(-8\,i\,a\,(7\,a-8\,b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticE}\left[i\,(e+f\,x),\,\frac{b}{a}\right]+\right.$$
$$32\,i\,a\,(a-b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[i\,(e+f\,x),\,\frac{b}{a}\right]+$$
$$\sqrt{2}\,\left(-24\,a^2+40\,a\,b-13\,b^2-4\,(2\,a-3\,b)\,b\,\text{Cosh}[2\,(e+f\,x)]+b^2\,\text{Cosh}[4\,(e+f\,x)]\right)$$
$$\left.\text{Tanh}[e+f\,x]\right)\Big/\left(24\,f\,\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}\right)$$

Problem 477: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 256 leaves, 7 steps):

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

$$\left((7\,a+b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Bigg/$$

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

$$\left((3\,a+5\,b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Bigg/$$

$$\left(3\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\frac{(7\,a+b)\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\,\text{Tanh}[e+f\,x]}{3\,f}$$

Result (type 4, 184 leaves):

$$\left(\sqrt{2}\,\left(-24\,a^2+8\,a\,b+3\,b^2-4\,b\,(2\,a+b)\,\text{Cosh}[2\,(e+f\,x)]+b^2\,\text{Cosh}[4\,(e+f\,x)]\right)\,\text{Coth}[e+f\,x]-\right.$$

$$8\,i\,a\,(7\,a+b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticE}\left[i\,(e+f\,x),\,\frac{b}{a}\right]+$$

$$\left.32\,i\,a\,(a-b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[i\,(e+f\,x),\,\frac{b}{a}\right]\right)\Bigg/$$

$$\left(24\,f\,\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}\right)$$

Problem 478: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Coth}[e+f\,x]^4\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}\,dx$$

Optimal (type 4, 306 leaves, 8 steps):

$$-\frac{(a+b)\,\text{Cosh}[e+f x]^2\,\text{Coth}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}}{f}+\frac{(3 a+5 b)\,\text{Cosh}[e+f x]\,\text{Sinh}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}}{3 f}-\frac{\text{Coth}[e+f x]^3\,\left(a+b\,\text{Sinh}[e+f x]^2\right)^{3/2}}{3 f}-\left(8\,(a+b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Bigg/\left(3 f\sqrt{\frac{\text{Sech}[e+f x]^2\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\left((3 a+b)\,(a+3 b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Bigg/\left(3 a f\sqrt{\frac{\text{Sech}[e+f x]^2\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\frac{8\,(a+b)\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{3 f}$$

Result (type 4, 368 leaves):

$$\frac{1}{3 f}\sqrt{2}\left(-\left(\left(i\,\left(3 a^2+6 a b-b^2\right)\sqrt{\frac{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\;\text{EllipticF}\left[i\,(e+f x),\frac{b}{a}\right]\right)\Bigg/\left(\sqrt{2}\,\sqrt{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}\right)\right)-\frac{1}{2 b}\,i\,\left(4 a b+4 b^2\right)\left(\frac{2\sqrt{2}\,a\sqrt{\frac{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\;\text{EllipticE}\left[i\,(e+f x),\frac{b}{a}\right]}{\sqrt{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}}-\frac{\sqrt{2}\,(2 a-b)\sqrt{\frac{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\;\text{EllipticF}\left[i\,(e+f x),\frac{b}{a}\right]}{\sqrt{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}}\right)\right)+\frac{1}{f}\sqrt{2 a-b+b\,\text{Cosh}[2\,(e+f x)]}\left(-\frac{2}{3}\left(\sqrt{2}\,a\,\text{Cosh}[e+f x]+\sqrt{2}\,b\,\text{Cosh}[e+f x]\right)\text{Csch}[e+f x]-\frac{a\,\text{Coth}[e+f x]\,\text{Csch}[e+f x]^2}{3\sqrt{2}}+\frac{b\,\text{Sinh}[2\,(e+f x)]}{6\sqrt{2}}\right)$$

Problem 485: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Tanh}[e+f x]^4}{\sqrt{a+b\,\text{Sinh}[e+f x]^2}}\,dx$$

Optimal (type 4, 219 leaves, 5 steps):

$$-\left(\left(2\,(2\,a-b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3\,(a-b)^2\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)\right)+\left((3\,a-b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],\,1-\frac{b}{a}\right]\,\text{Sech}[e+f x]\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(3\,(a-b)^2\,f\,\sqrt{\frac{\text{Sech}[e+f x]^2\,\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\frac{\text{Sech}[e+f x]^2\,\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{3\,(a-b)\,f}$$

Result (type 4, 206 leaves):

$$\left(-4\,i\,a\,(2\,a-b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticE}\left[i\,(e+f x),\,\frac{b}{a}\right]+2\,i\,a\,(a-b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f x)]}{a}}\,\text{EllipticF}\left[i\,(e+f x),\,\frac{b}{a}\right]-\frac{1}{\sqrt{2}}\left(2\,\left(4\,a^2-3\,a\,b+b^2\right)\,\text{Cosh}[2\,(e+f x)]+(2\,a-b)\,(2\,a+b+b\,\text{Cosh}[4\,(e+f x)])\right)\,\text{Sech}[e+f x]^2\,\text{Tanh}[e+f x]\right)\Big/\left(6\,(a-b)^2\,f\,\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f x)]}\right)$$

Problem 486: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 156 leaves, 6 steps):

$$-\left(\left(\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left((a-b)\,f\sqrt{\frac{\text{Sech}[e+f x]^2\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)\right)+$$

$$\left(\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left((a-b)\,f\sqrt{\frac{\text{Sech}[e+f x]^2\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)$$

Result (type 4, 109 leaves):

$$\left(-2\,i\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+f x)]}{a}}\,\text{EllipticE}\left[i\,(e+f x),\frac{b}{a}\right]+\sqrt{2}\left(-2a+b-b\,\text{Cosh}[2(e+f x)]\right)\text{Tanh}[e+f x]\right)\Big/\left(2\,(a-b)\,f\sqrt{2a-b+b\,\text{Cosh}[2(e+f x)]}\right)$$

Problem 488: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 207 leaves, 6 steps):

$$-\frac{\text{Coth}[e+f x]\sqrt{a+b\,\text{Sinh}[e+f x]^2}}{a f}-\left(\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(a f\sqrt{\frac{\text{Sech}[e+f x]^2\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+$$

$$\left(\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x]\sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Big/\left(a f\sqrt{\frac{\text{Sech}[e+f x]^2\left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\frac{\sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{a f}$$

Result (type 4, 105 leaves):

$$\left(\sqrt{2}\left(-2a+b-b\,\text{Cosh}[2(e+fx)]\right)\text{Coth}[e+fx]-2\,i\,a\sqrt{\frac{2a-b+b\,\text{Cosh}[2(e+fx)]}{a}}\;\text{EllipticE}\left[i(e+fx),\frac{b}{a}\right]\right)\Big/\left(2af\sqrt{2a-b+b\,\text{Cosh}[2(e+fx)]}\right)$$

Problem 489: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Coth}[e+fx]^4}{\sqrt{a+b\,\text{Sinh}[e+fx]^2}}\,dx$$

Optimal (type 4, 285 leaves, 7 steps):

$$-\frac{2(2a-b)\,\text{Coth}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}}{3a^2f}-\frac{\text{Coth}[e+fx]\,\text{Csch}[e+fx]^2\sqrt{a+b\,\text{Sinh}[e+fx]^2}}{3af}-\left(2(2a-b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Big/\left(3a^2f\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)+\left((3a-b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\text{Sech}[e+fx]\sqrt{a+b\,\text{Sinh}[e+fx]^2}\right)\Big/\left(3a^2f\sqrt{\frac{\text{Sech}[e+fx]^2\left(a+b\,\text{Sinh}[e+fx]^2\right)}{a}}\right)+\frac{2(2a-b)\sqrt{a+b\,\text{Sinh}[e+fx]^2}\,\text{Tanh}[e+fx]}{3a^2f}$$

Result (type 4, 357 leaves):

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

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

$$\left.\text{i}\,\left(2\,a\,b-b^2\right)\left(\frac{2\,\sqrt{2}\,a\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticE}\left[\text{i}\,(e+f\,x),\frac{b}{a}\right]}{\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}-\frac{\sqrt{2}\,(2\,a-b)\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\,\text{EllipticF}\left[\text{i}\,(e+f\,x),\frac{b}{a}\right]}{\sqrt{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}}\right)\right)$$

Problem 496: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Tanh}[e+f\,x]^4}{\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}}\,dx$$

Optimal (type 4, 275 leaves, 6 steps):

$$-\left(\left(\sqrt{a}\ \sqrt{b}\ (7a+b)\ \text{Cosh}[e+fx]\ \text{EllipticE}\left[\text{ArcTan}\left[\frac{\sqrt{b}\ \text{Sinh}[e+fx]}{\sqrt{a}}\right],1-\frac{a}{b}\right]\right)\Bigg/\left(3\ (a-b)^3 f\sqrt{\frac{a\ \text{Cosh}[e+fx]^2}{a+b\ \text{Sinh}[e+fx]^2}}\ \sqrt{a+b\ \text{Sinh}[e+fx]^2}\right)\right)+\left((3a+5b)\ \text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\ \text{Sech}[e+fx]\ \sqrt{a+b\ \text{Sinh}[e+fx]^2}\right)\Bigg/\left(3\ (a-b)^3 f\sqrt{\frac{\text{Sech}[e+fx]^2\ \left(a+b\ \text{Sinh}[e+fx]^2\right)}{a}}\right)-\frac{4\ a\ \text{Tanh}[e+fx]}{3\ (a-b)^2 f\sqrt{a+b\ \text{Sinh}[e+fx]^2}}+\frac{\text{Sech}[e+fx]^2\ \text{Tanh}[e+fx]}{3\ (a-b)\ f\sqrt{a+b\ \text{Sinh}[e+fx]^2}}$$

Result (type 4, 212 leaves):

$$\left(-2\,\mathrm{i}\,a\ (7a+b)\sqrt{\frac{2a-b+b\ \text{Cosh}[2\ (e+fx)]}{a}}\ \text{EllipticE}\left[\mathrm{i}\ (e+fx),\frac{b}{a}\right]+8\,\mathrm{i}\,a\ (a-b)\sqrt{\frac{2a-b+b\ \text{Cosh}[2\ (e+fx)]}{a}}\ \text{EllipticF}\left[\mathrm{i}\ (e+fx),\frac{b}{a}\right]-\frac{1}{2\sqrt{2}}\left(8a^2+21ab-5b^2+4\left(4a^2+3ab+b^2\right)\text{Cosh}[2\ (e+fx)]+b\ (7a+b)\ \text{Cosh}[4\ (e+fx)]\right)\text{Sech}[e+fx]^2\ \text{Tanh}[e+fx]\right)\Bigg/\left(6\ (a-b)^3 f\sqrt{2a-b+b\ \text{Cosh}[2\ (e+fx)]}\right)$$

Problem 497: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 217 leaves, 5 steps):

$$-\frac{2\sqrt{a}\ \sqrt{b}\ \text{Cosh}[e+fx]\ \text{EllipticE}\left[\text{ArcTan}\left[\frac{\sqrt{b}\ \text{Sinh}[e+fx]}{\sqrt{a}}\right],1-\frac{a}{b}\right]}{(a-b)^2 f\sqrt{\frac{a\ \text{Cosh}[e+fx]^2}{a+b\ \text{Sinh}[e+fx]^2}}\ \sqrt{a+b\ \text{Sinh}[e+fx]^2}}+\left((a+b)\ \text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+fx]],1-\frac{b}{a}\right]\ \text{Sech}[e+fx]\ \sqrt{a+b\ \text{Sinh}[e+fx]^2}\right)\Bigg/\left(a\ (a-b)^2 f\sqrt{\frac{\text{Sech}[e+fx]^2\ \left(a+b\ \text{Sinh}[e+fx]^2\right)}{a}}\right)-\frac{\text{Tanh}[e+fx]}{(a-b)\ f\sqrt{a+b\ \text{Sinh}[e+fx]^2}}$$

Result (type 4, 158 leaves):

$$\left(-2\,\mathrm{i}\,\sqrt{2}\,a\,\sqrt{\frac{2\,a-b+b\,\mathrm{Cosh}[2\,(e+f\,x)]}{a}}\;\mathrm{EllipticE}\left[\mathrm{i}\,(e+f\,x),\,\frac{b}{a}\right]+\mathrm{i}\,\sqrt{2}\,(a-b)\,\sqrt{\frac{2\,a-b+b\,\mathrm{Cosh}[2\,(e+f\,x)]}{a}}\;\mathrm{EllipticF}\left[\mathrm{i}\,(e+f\,x),\,\frac{b}{a}\right]-2\,(a+b\,\mathrm{Cosh}[2\,(e+f\,x)])\,\mathrm{Tanh}[e+f\,x]\right)\Big/\left((a-b)^2\,f\,\sqrt{4\,a-2\,b+2\,b\,\mathrm{Cosh}[2\,(e+f\,x)]}\right)$$

Problem 499: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 237 leaves, 7 steps):

$$\frac{\mathrm{Coth}[e+f\,x]}{a\,f\,\sqrt{a+b\,\mathrm{Sinh}[e+f\,x]^2}}-\frac{2\,\mathrm{Coth}[e+f\,x]\,\sqrt{a+b\,\mathrm{Sinh}[e+f\,x]^2}}{a^2\,f}-\left(2\,\mathrm{EllipticE}\left[\mathrm{ArcTan}[\mathrm{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\mathrm{Sech}[e+f\,x]\,\sqrt{a+b\,\mathrm{Sinh}[e+f\,x]^2}\right)\Big/\left(a^2\,f\,\sqrt{\frac{\mathrm{Sech}[e+f\,x]^2\,\left(a+b\,\mathrm{Sinh}[e+f\,x]^2\right)}{a}}\right)+\left(\mathrm{EllipticF}\left[\mathrm{ArcTan}[\mathrm{Sinh}[e+f\,x]],\,1-\frac{b}{a}\right]\mathrm{Sech}[e+f\,x]\,\sqrt{a+b\,\mathrm{Sinh}[e+f\,x]^2}\right)\Big/\left(a^2\,f\,\sqrt{\frac{\mathrm{Sech}[e+f\,x]^2\,\left(a+b\,\mathrm{Sinh}[e+f\,x]^2\right)}{a}}\right)+\frac{2\,\sqrt{a+b\,\mathrm{Sinh}[e+f\,x]^2}\;\mathrm{Tanh}[e+f\,x]}{a^2\,f}$$

Result (type 4, 153 leaves):

$$\left(-2\left(a-b+b\,\text{Cosh}[2\,(e+f\,x)]\right)\text{Coth}[e+f\,x]-2\,i\,\sqrt{2}\,a\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\;\text{EllipticE}\left[i\,(e+f\,x),\frac{b}{a}\right]+i\,\sqrt{2}\,a\,\sqrt{\frac{2\,a-b+b\,\text{Cosh}[2\,(e+f\,x)]}{a}}\;\text{EllipticF}\left[i\,(e+f\,x),\frac{b}{a}\right]\right)\Big/\left(a^2\,f\,\sqrt{4\,a-2\,b+2\,b\,\text{Cosh}[2\,(e+f\,x)]}\right)$$

Problem 500: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Coth}[e+f\,x]^4}{\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}}\,dx$$

Optimal (type 4, 341 leaves, 8 steps):

$$-\frac{(a-b)\,\text{Coth}[e+f\,x]\,\text{Csch}[e+f\,x]^2}{a\,b\,f\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}-\frac{(7\,a-8\,b)\,\text{Coth}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{3\,a^3\,f}+\frac{(3\,a-4\,b)\,\text{Coth}[e+f\,x]\,\text{Csch}[e+f\,x]^2\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}}{3\,a^2\,b\,f}-\left((7\,a-8\,b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,a^3\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\left((3\,a-4\,b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\text{Sech}[e+f\,x]\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,a^3\,f\,\sqrt{\frac{\text{Sech}[e+f\,x]^2\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)}{a}}\right)+\frac{(7\,a-8\,b)\,\sqrt{a+b\,\text{Sinh}[e+f\,x]^2}\;\text{Tanh}[e+f\,x]}{3\,a^3\,f}$$

Result (type 4, 441 leaves):

$$\frac{1}{3 a^3 f}\left(-\left(\left(\mathrm{i}\left(3\sqrt{2}\,a^2-\frac{15 a b}{\sqrt{2}}+4\sqrt{2}\,b^2\right)\sqrt{\frac{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}{a}}\,\mathrm{EllipticF}\left[\mathrm{i}(e+fx),\frac{b}{a}\right]\right)\Big/\left(\sqrt{2}\sqrt{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}\right)\right)-\frac{1}{2b}\,\mathrm{i}\left(\frac{7ab}{\sqrt{2}}-4\sqrt{2}\,b^2\right)\left(\frac{2\sqrt{2}\,a\sqrt{\frac{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}{a}}\,\mathrm{EllipticE}\left[\mathrm{i}(e+fx),\frac{b}{a}\right]}{\sqrt{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}}-\frac{\sqrt{2}\,(2a-b)\sqrt{\frac{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}{a}}\,\mathrm{EllipticF}\left[\mathrm{i}(e+fx),\frac{b}{a}\right]}{\sqrt{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}}\right)\right)+\frac{1}{f}\sqrt{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}\left(\frac{\left(-4\sqrt{2}\,a\,\mathrm{Cosh}[e+fx]+5\sqrt{2}\,b\,\mathrm{Cosh}[e+fx]\right)\mathrm{Csch}[e+fx]}{6a^3}-\frac{\mathrm{Coth}[e+fx]\,\mathrm{Csch}[e+fx]^2}{3\sqrt{2}\,a^2}+\frac{-\sqrt{2}\,a b\,\mathrm{Sinh}[2(e+fx)]+\sqrt{2}\,b^2\,\mathrm{Sinh}[2(e+fx)]}{2a^3\left(2a-b+b\,\mathrm{Cosh}[2(e+fx)]\right)}\right)$$

Problem 507: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\mathrm{Tanh}[e+fx]^4}{\left(a+b\,\mathrm{Sinh}[e+fx]^2\right)^{5/2}}\,dx$$

Optimal (type 4, 333 leaves, 7 steps):

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

$$\left(8\,\sqrt{a}\,\sqrt{b}\,(a+b)\,\text{Cosh}[e+f\,x]\,\text{EllipticE}\left[\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sinh}[e+f\,x]}{\sqrt{a}}\right],1-\frac{a}{b}\right]\right)\Big/$$

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

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

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

$$\frac{2\,(2\,a+b)\,\text{Tanh}[e+f\,x]}{3\,(a-b)^2\,f\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}}+\frac{\text{Sech}[e+f\,x]^2\,\text{Tanh}[e+f\,x]}{3\,(a-b)\,f\,\left(a+b\,\text{Sinh}[e+f\,x]^2\right)^{3/2}}$$

Result (type 4, 479 leaves) :

$$\frac{1}{3(a-b)^4 f}\sqrt{2}\left(-\left(\left(\mathrm{i}\left(3a^2+6ab-b^2\right)\sqrt{\frac{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}{a}}\,\mathrm{EllipticF}\left[\mathrm{i}(e+fx),\frac{b}{a}\right]\right)\Big/\left(\sqrt{2}\sqrt{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}\right)\right)-\frac{1}{2b}\right.$$

$$\left.\mathrm{i}\left(4ab+4b^2\right)\left(\frac{2\sqrt{2}\,a\sqrt{\frac{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}{a}}\,\mathrm{EllipticE}\left[\mathrm{i}(e+fx),\frac{b}{a}\right]}{\sqrt{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}}-\frac{\sqrt{2}(2a-b)\sqrt{\frac{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}{a}}\,\mathrm{EllipticF}\left[\mathrm{i}(e+fx),\frac{b}{a}\right]}{\sqrt{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}}\right)\right)+\frac{1}{f}$$

$$\sqrt{2a-b+b\,\mathrm{Cosh}[2(e+fx)]}\left(-\frac{2\,\mathrm{Sech}[e+fx]\left(\sqrt{2}\,a\,\mathrm{Sinh}[e+fx]+\sqrt{2}\,b\,\mathrm{Sinh}[e+fx]\right)}{3(a-b)^4}-\frac{\sqrt{2}\,a\,b\,\mathrm{Sinh}[2(e+fx)]}{3(a-b)^3\left(2a-b+b\,\mathrm{Cosh}[2(e+fx)]\right)^2}-\frac{2\left(\sqrt{2}\,a\,b\,\mathrm{Sinh}[2(e+fx)]+\sqrt{2}\,b^2\,\mathrm{Sinh}[2(e+fx)]\right)}{3(a-b)^4\left(2a-b+b\,\mathrm{Cosh}[2(e+fx)]\right)}+\frac{\mathrm{Sech}[e+fx]^2\,\mathrm{Tanh}[e+fx]}{3\sqrt{2}(a-b)^3}\right)$$

Problem 508: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\mathrm{Tanh}[e+fx]^2}{\left(a+b\,\mathrm{Sinh}[e+fx]^2\right)^{5/2}}\,dx$$

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

$$-\frac{4\,b\,\mathrm{Cosh}[e+f\,x]\,\mathrm{Sinh}[e+f\,x]}{3\,(a-b)^2\,f\,\left(a+b\,\mathrm{Sinh}[e+f\,x]^2\right)^{3/2}}-\frac{\sqrt{b}\,(7\,a+b)\,\mathrm{Cosh}[e+f\,x]\,\mathrm{EllipticE}\left[\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\mathrm{Sinh}[e+f\,x]}{\sqrt{a}}\right],1-\frac{a}{b}\right]}{3\,\sqrt{a}\,(a-b)^3\,f\,\sqrt{\frac{a\,\mathrm{Cosh}[e+f\,x]^2}{a+b\,\mathrm{Sinh}[e+f\,x]^2}}\,\sqrt{a+b\,\mathrm{Sinh}[e+f\,x]^2}}+$$

$$\left((3\,a+5\,b)\,\mathrm{EllipticF}\left[\mathrm{ArcTan}[\mathrm{Sinh}[e+f\,x]],1-\frac{b}{a}\right]\,\mathrm{Sech}[e+f\,x]\,\sqrt{a+b\,\mathrm{Sinh}[e+f\,x]^2}\right)\Big/\left(3\,a\,(a-b)^3\,f\,\sqrt{\frac{\mathrm{Sech}[e+f\,x]^2\,\left(a+b\,\mathrm{Sinh}[e+f\,x]^2\right)}{a}}\right)-\frac{\mathrm{Tanh}[e+f\,x]}{(a-b)\,f\,\left(a+b\,\mathrm{Sinh}[e+f\,x]^2\right)^{3/2}}$$

Result (type 4, 215 leaves):

$$\left(-2\,i\,a^2\,(7\,a+b)\,\left(\frac{2\,a-b+b\,\mathrm{Cosh}[2\,(e+f\,x)]}{a}\right)^{3/2}\,\mathrm{EllipticE}\left[i\,(e+f\,x),\frac{b}{a}\right]+8\,i\,a^2\,(a-b)\,\left(\frac{2\,a-b+b\,\mathrm{Cosh}[2\,(e+f\,x)]}{a}\right)^{3/2}\,\mathrm{EllipticF}\left[i\,(e+f\,x),\frac{b}{a}\right]-\frac{1}{\sqrt{2}}\left(24\,a^3-4\,a^2\,b+5\,a\,b^2-b^3+4\,a\,(11\,a-3\,b)\,b\,\mathrm{Cosh}[2\,(e+f\,x)]+b^2\,(7\,a+b)\,\mathrm{Cosh}[4\,(e+f\,x)]\right)\,\mathrm{Tanh}[e+f\,x]\right)\Big/\left(6\,a\,(a-b)^3\,f\,\left(2\,a-b+b\,\mathrm{Cosh}[2\,(e+f\,x)]\right)^{3/2}\right)$$

Problem 510: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 351 leaves, 8 steps):

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

$$\frac{(7 a-8 b) \text{Coth}[e+f x] \sqrt{a+b \text{Sinh}[e+f x]^2}}{3 a^3 (a-b) f}-$$

$$\left((7 a-8 b) \text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]], 1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b \text{Sinh}[e+f x]^2}\right)\Big/$$

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

$$\left((3 a-4 b) \text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]], 1-\frac{b}{a}\right] \text{Sech}[e+f x] \sqrt{a+b \text{Sinh}[e+f x]^2}\right)\Big/$$

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

$$\frac{(7 a-8 b) \sqrt{a+b \text{Sinh}[e+f x]^2} \text{Tanh}[e+f x]}{3 a^3 (a-b) f}$$

Result (type 4, 226 leaves):

$$\Bigg(-\frac{1}{\sqrt{2}}\Big(24 a^3-68 a^2 b+69 a b^2-24 b^3+$$

$$4 b \left(11 a^2-19 a b+8 b^2\right) \text{Cosh}[2 (e+f x)]+(7 a-8 b) b^2 \text{Cosh}[4 (e+f x)]\Big) \text{Coth}[e+f x]-$$

$$2 i a^2 (7 a-8 b) \left(\frac{2 a-b+b \text{Cosh}[2 (e+f x)]}{a}\right)^{3/2} \text{EllipticE}\left[i (e+f x), \frac{b}{a}\right]+$$

$$8 i a^2 (a-b) \left(\frac{2 a-b+b \text{Cosh}[2 (e+f x)]}{a}\right)^{3/2} \text{EllipticF}\left[i (e+f x), \frac{b}{a}\right]\Bigg)\Big/$$

$$\left(6 a^3 (a-b) f (2 a-b+b \text{Cosh}[2 (e+f x)])^{3/2}\right)$$

Problem 511: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Coth}[e+f x]^4}{\left(a+b \text{Sinh}[e+f x]^2\right)^{5/2}} \, dx$$

Optimal (type 4, 385 leaves, 9 steps):

$$-\frac{(a-b)\,\text{Coth}[e+f x]\,\text{Csch}[e+f x]^2}{3 a b f \left(a+b\,\text{Sinh}[e+f x]^2\right)^{3/2}}-\frac{2 (a-3 b)\,\text{Coth}[e+f x]\,\text{Csch}[e+f x]^2}{3 a^2 b f \sqrt{a+b\,\text{Sinh}[e+f x]^2}}-\frac{8 (a-2 b)\,\text{Coth}[e+f x] \sqrt{a+b\,\text{Sinh}[e+f x]^2}}{3 a^4 f}+\frac{(3 a-8 b)\,\text{Coth}[e+f x]\,\text{Csch}[e+f x]^2 \sqrt{a+b\,\text{Sinh}[e+f x]^2}}{3 a^3 b f}-\left(8 (a-2 b)\,\text{EllipticE}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x] \sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Bigg/\left(3 a^4 f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\left((3 a-8 b)\,\text{EllipticF}\left[\text{ArcTan}[\text{Sinh}[e+f x]],1-\frac{b}{a}\right]\text{Sech}[e+f x] \sqrt{a+b\,\text{Sinh}[e+f x]^2}\right)\Bigg/\left(3 a^4 f \sqrt{\frac{\text{Sech}[e+f x]^2 \left(a+b\,\text{Sinh}[e+f x]^2\right)}{a}}\right)+\frac{8 (a-2 b) \sqrt{a+b\,\text{Sinh}[e+f x]^2}\,\text{Tanh}[e+f x]}{3 a^4 f}$$

Result (type 4, 247 leaves):

$$-\left(\left(i \left(\frac{1}{\sqrt{2}} i\, b \left(8 a^3-63 a^2 b+92 a b^2-40 b^3-2 \left(8 a^3-38 a^2 b+63 a b^2-30 b^3\right) \text{Cosh}[2 (e+f x)]-b \left(13 a^2-36 a b+24 b^2\right) \text{Cosh}[4 (e+f x)]-2 a b^2\,\text{Cosh}[6 (e+f x)]+4 b^3\,\text{Cosh}[6 (e+f x)]\right) \text{Coth}[e+f x]\,\text{Csch}[e+f x]^2+2 a^2 b \left(\frac{2 a-b+b\,\text{Cosh}[2 (e+f x)]}{a}\right)^{3/2} \left(8 (a-2 b)\,\text{EllipticE}\left[i (e+f x),\frac{b}{a}\right]+(-5 a+8 b)\,\text{EllipticF}\left[i (e+f x),\frac{b}{a}\right]\right)\right)\right)\Bigg/\left(6 a^4 b f \left(2 a-b+b\,\text{Cosh}[2 (e+f x)]\right)^{3/2}\right)\right)$$

Problem 512: Unable to integrate problem.

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

Optimal (type 6, 122 leaves, 3 steps):

$$\frac{1}{d f (1+m)}\text{AppellF1}\left[\frac{1+m}{2},\frac{1+m}{2},-p,\frac{3+m}{2},-\text{Sinh}[e+f x]^2,-\frac{b\,\text{Sinh}[e+f x]^2}{a}\right] \left(\text{Cosh}[e+f x]^2\right)^{\frac{1+m}{2}} \left(a+b\,\text{Sinh}[e+f x]^2\right)^p \left(1+\frac{b\,\text{Sinh}[e+f x]^2}{a}\right)^{-p} (d\,\text{Tanh}[e+f x])^{1+m}$$

Result (type 8, 27 leaves):

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

Problem 513: Unable to integrate problem.

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

Optimal (type 5, 110 leaves, 3 steps):

$$-\left(\left(\left(a-b\,(1+p)\right)\,\text{Hypergeometric2F1}\left[1,\,1+p,\,2+p,\,\frac{a+b\,\text{Sinh}[c+d\,x]^2}{a-b}\right]\right.\right.$$
$$\left.\left.\left(a+b\,\text{Sinh}[c+d\,x]^2\right)^{1+p}\right)\Big/\left(2\,(a-b)^2\,d\,(1+p)\right)\right)+\frac{\text{Sech}[c+d\,x]^2\,\left(a+b\,\text{Sinh}[c+d\,x]^2\right)^{1+p}}{2\,(a-b)\,d}$$

Result (type 8, 25 leaves):

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

Problem 514: Unable to integrate problem.

$$\int \left(a+b\,\text{Sinh}[c+d\,x]^2\right)^p\,\text{Tanh}[c+d\,x]\,dx$$

Optimal (type 5, 63 leaves, 2 steps):

$$-\left(\left(\text{Hypergeometric2F1}\left[1,\,1+p,\,2+p,\,\frac{a+b\,\text{Sinh}[c+d\,x]^2}{a-b}\right]\,\left(a+b\,\text{Sinh}[c+d\,x]^2\right)^{1+p}\right)\Big/\right.$$
$$\left.\left(2\,(a-b)\,d\,(1+p)\right)\right)$$

Result (type 8, 23 leaves):

$$\int \left(a+b\,\text{Sinh}[c+d\,x]^2\right)^p\,\text{Tanh}[c+d\,x]\,dx$$

Problem 516: Unable to integrate problem.

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

Optimal (type 5, 94 leaves, 3 steps):

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

Result (type 8, 25 leaves):

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

Problem 517: Unable to integrate problem.

$$\int \left(a+b\,\text{Sinh}[c+d\,x]^2\right)^p\,\text{Tanh}[c+d\,x]^4\,dx$$

Optimal (type 6, 103 leaves, 3 steps):

$$\frac{1}{5\,d}\text{AppellF1}\left[\frac{5}{2},\frac{5}{2},-p,\frac{7}{2},-\text{Sinh}[c+d\,x]^2,-\frac{b\,\text{Sinh}[c+d\,x]^2}{a}\right]\sqrt{\text{Cosh}[c+d\,x]^2}\;\text{Sinh}[c+d\,x]^4\left(a+b\,\text{Sinh}[c+d\,x]^2\right)^p\left(1+\frac{b\,\text{Sinh}[c+d\,x]^2}{a}\right)^{-p}\text{Tanh}[c+d\,x]$$

Result (type 8, 25 leaves):

$$\int \left(a+b\,\text{Sinh}[c+d\,x]^2\right)^p\,\text{Tanh}[c+d\,x]^4\,dx$$

Problem 518: Unable to integrate problem.

$$\int \left(a+b\,\text{Sinh}[c+d\,x]^2\right)^p\,\text{Tanh}[c+d\,x]^2\,dx$$

Optimal (type 6, 103 leaves, 3 steps):

$$\frac{1}{3\,d}\text{AppellF1}\left[\frac{3}{2},\frac{3}{2},-p,\frac{5}{2},-\text{Sinh}[c+d\,x]^2,-\frac{b\,\text{Sinh}[c+d\,x]^2}{a}\right]\sqrt{\text{Cosh}[c+d\,x]^2}\;\text{Sinh}[c+d\,x]^2\left(a+b\,\text{Sinh}[c+d\,x]^2\right)^p\left(1+\frac{b\,\text{Sinh}[c+d\,x]^2}{a}\right)^{-p}\text{Tanh}[c+d\,x]$$

Result (type 8, 25 leaves):

$$\int \left(a+b\,\text{Sinh}[c+d\,x]^2\right)^p\,\text{Tanh}[c+d\,x]^2\,dx$$

Problem 519: Unable to integrate problem.

$$\int \text{Coth}[c+d\,x]^2\left(a+b\,\text{Sinh}[c+d\,x]^2\right)^p\,dx$$

Optimal (type 6, 99 leaves, 3 steps):

$$-\frac{1}{d}\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-p,\frac{1}{2},-\text{Sinh}[c+d\,x]^2,-\frac{b\,\text{Sinh}[c+d\,x]^2}{a}\right]\sqrt{\text{Cosh}[c+d\,x]^2}\;\text{Csch}[c+d\,x]\,\text{Sech}[c+d\,x]\left(a+b\,\text{Sinh}[c+d\,x]^2\right)^p\left(1+\frac{b\,\text{Sinh}[c+d\,x]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \text{Coth}[c+d\,x]^2\left(a+b\,\text{Sinh}[c+d\,x]^2\right)^p\,dx$$

Problem 520: Unable to integrate problem.

$$\int \text{Coth}[c+d x]^4 \left(a+b\,\text{Sinh}[c+d x]^2\right)^p \, dx$$

Optimal (type 6, 103 leaves, 3 steps):

$$-\frac{1}{3 d}\text{AppellF1}\left[-\frac{3}{2},-\frac{3}{2},-p,-\frac{1}{2},-\text{Sinh}[c+d x]^2,-\frac{b\,\text{Sinh}[c+d x]^2}{a}\right]\sqrt{\text{Cosh}[c+d x]^2}\;\text{Csch}[c+d x]^3\,\text{Sech}[c+d x]\left(a+b\,\text{Sinh}[c+d x]^2\right)^p\left(1+\frac{b\,\text{Sinh}[c+d x]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \text{Coth}[c+d x]^4 \left(a+b\,\text{Sinh}[c+d x]^2\right)^p \, dx$$

Problem 521: Result is not expressed in closed-form.

$$\int \frac{\text{Coth}[x]^3}{a+b\,\text{Sinh}[x]^3} \, dx$$

Optimal (type 3, 152 leaves, 12 steps):

$$\frac{b^{2/3}\,\text{ArcTan}\left[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sinh}[x]}{\sqrt{3}\;a^{1/3}}\right]}{\sqrt{3}\;a^{5/3}}-\frac{\text{Csch}[x]^2}{2\,a}+\frac{\text{Log}[\text{Sinh}[x]]}{a}-\frac{b^{2/3}\,\text{Log}\left[a^{1/3}+b^{1/3}\,\text{Sinh}[x]\right]}{3\,a^{5/3}}+\frac{b^{2/3}\,\text{Log}\left[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sinh}[x]+b^{2/3}\,\text{Sinh}[x]^2\right]}{6\,a^{5/3}}-\frac{\text{Log}\left[a+b\,\text{Sinh}[x]^3\right]}{3\,a}$$

Result (type 7, 162 leaves):

$$-\frac{1}{24\,a}\Big(8\,\text{RootSum}\Big[-b+3\,b\,\#1^2+8\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\left(-b\,x+b\,\text{Log}\left[e^x-\#1\right]+4\,a\,x\,\#1^3-4\,a\,\text{Log}\left[e^x-\#1\right]\#1^3-3\,b\,x\,\#1^4+3\,b\,\text{Log}\left[e^x-\#1\right]\#1^4\right)\Big/\left(b-2\,b\,\#1^2-4\,a\,\#1^3+b\,\#1^4\right)\,\&\Big]+3\left(8\,x+\text{Csch}\left[\frac{x}{2}\right]^2-8\,\text{Log}[\text{Sinh}[x]]-\text{Sech}\left[\frac{x}{2}\right]^2\right)\Big)$$

Problem 522: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Coth}[x]}{\sqrt{a+b\,\text{Sinh}[x]^3}} \, dx$$

Optimal (type 3, 28 leaves, 4 steps):

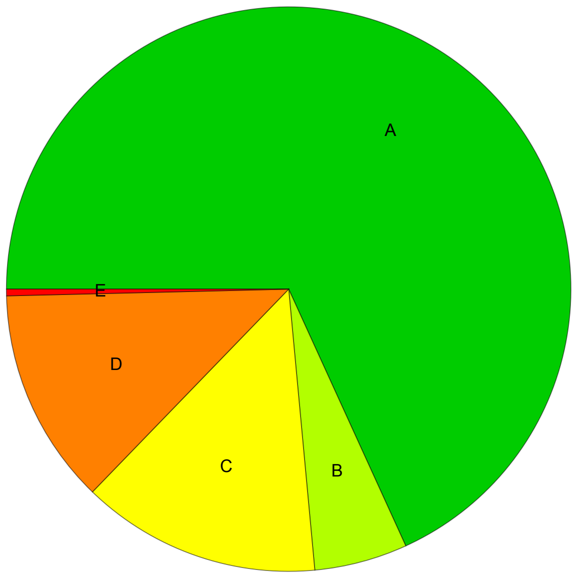
$$-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sinh}[x]^3}}{\sqrt{a}}\right]}{3\sqrt{a}}$$

Result (type 3, 66 leaves):

$$-\frac{2\,\sqrt{b}\;\text{ArcSinh}\left[\frac{\sqrt{a}\;\text{Csch}[x]^{3/2}}{\sqrt{b}}\right]\sqrt{\frac{b+a\,\text{Csch}[x]^3}{b}}}{3\,\sqrt{a}\;\text{Csch}[x]^{3/2}\,\sqrt{a+b\,\text{Sinh}[x]^3}}$$

Summary of Integration Test Results

525 integration problems



A - 358 optimal antiderivatives

B - 28 more than twice size of optimal antiderivatives

C - 72 unnecessarily complex antiderivatives

D - 65 unable to integrate problems

E - 2 integration timeouts