Mathematica 11.3 Integration Test Results

on the problems in the test-suite directory "6 Hyperbolic functions\6.5 Hyperbolic secant"

Test results for the 16 problems in "6.5.1 (c+d x)^m (a+b sech)^n.m"

Problem 3: Result more than twice size of optimal antiderivative.

$$\int (c+d x) \operatorname{Sech}[a+b x] \, dx$$

Optimal (type 4, 61 leaves, 5 steps):

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

Result (type 4, 132 leaves):

$$\frac{1}{2 b^2}\left(4 b c \operatorname{ArcTan}\left[\operatorname{Tanh}\left[\frac{1}{2}(a+b x)\right]\right]-d(-2 i a+\pi-2 i b x)\left(\operatorname{Log}\left[1-i e^{a+b x}\right]-\operatorname{Log}\left[1+i e^{a+b x}\right]\right)+ d(-2 i a+\pi) \operatorname{Log}\left[\operatorname{Cot}\left[\frac{1}{4}(2 i a+\pi+2 i b x)\right]\right]-2 i d\left(\operatorname{PolyLog}\left[2,-i e^{a+b x}\right]-\operatorname{PolyLog}\left[2, i e^{a+b x}\right]\right)\right)$$

Problem 6: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 73 leaves, 5 steps):

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

Result (type 4, 277 leaves):

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

$$\left(d^2\,\mathrm{Csch}[a]\,\left(-b^2\,e^{-\mathrm{ArcTanh}[\mathrm{Coth}[a]]}\,x^2+\frac{1}{\sqrt{1-\mathrm{Coth}[a]^2}}\,i\,\mathrm{Coth}[a]\right.\right.$$
$$\left(-b\,x\,(-\pi+2\,i\,\mathrm{ArcTanh}[\mathrm{Coth}[a]])-\pi\,\mathrm{Log}\left[1+e^{2\,b\,x}\right]-2\,(i\,b\,x+i\,\mathrm{ArcTanh}[\mathrm{Coth}[a]])\,\mathrm{Log}\left[1-e^{2\,i\,(i\,b\,x+i\,\mathrm{ArcTanh}[\mathrm{Coth}[a]])}\right]+\right.$$
$$\left.\left.\left.\pi\,\mathrm{Log}[\mathrm{Cosh}[b\,x]]+2\,i\,\mathrm{ArcTanh}[\mathrm{Coth}[a]]\,\mathrm{Log}[i\,\mathrm{Sinh}[b\,x+\mathrm{ArcTanh}[\mathrm{Coth}[a]]]]+i\,\mathrm{PolyLog}\left[2,\,e^{2\,i\,(i\,b\,x+i\,\mathrm{ArcTanh}[\mathrm{Coth}[a]])}\right]\right)\right)\mathrm{Sech}[a]\right)\Big/$$
$$\left(b^3\,\sqrt{\mathrm{Csch}[a]^2\,\left(-\mathrm{Cosh}[a]^2+\mathrm{Sinh}[a]^2\right)}\right)+\frac{\mathrm{Sech}[a]\,\mathrm{Sech}[a+b\,x]\,\left(c^2\,\mathrm{Sinh}[b\,x]+2\,c\,d\,x\,\mathrm{Sinh}[b\,x]+d^2\,x^2\,\mathrm{Sinh}[b\,x]\right)}{b}$$

Problem 11: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 102 leaves, 6 steps):

$$\frac{(c+d\,x)\,\mathrm{ArcTan}\left[e^{a+b\,x}\right]}{b}-\frac{i\,d\,\mathrm{PolyLog}\left[2,\,-i\,e^{a+b\,x}\right]}{2\,b^2}+\frac{i\,d\,\mathrm{PolyLog}\left[2,\,i\,e^{a+b\,x}\right]}{2\,b^2}+\frac{d\,\mathrm{Sech}[a+b\,x]}{2\,b^2}+\frac{(c+d\,x)\,\mathrm{Sech}[a+b\,x]\,\mathrm{Tanh}[a+b\,x]}{2\,b}$$

Result (type 4, 263 leaves):

$$\frac{c\,\mathrm{ArcTan}\left[\mathrm{Tanh}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{b}-\frac{1}{2\,b^2}$$
$$d\,\left(\left(-i\,a+\frac{\pi}{2}-i\,b\,x\right)\,\left(\mathrm{Log}\left[1-e^{i\,\left(-i\,a+\frac{\pi}{2}-i\,b\,x\right)}\right]-\mathrm{Log}\left[1+e^{i\,\left(-i\,a+\frac{\pi}{2}-i\,b\,x\right)}\right]\right)-\left(-i\,a+\frac{\pi}{2}\right)\,\mathrm{Log}\left[\mathrm{Tan}\left[\frac{1}{2}\,\left(-i\,a+\frac{\pi}{2}-i\,b\,x\right)\right]\right]+\right.$$
$$\left.i\,\left(\mathrm{PolyLog}\left[2,\,-e^{i\,\left(-i\,a+\frac{\pi}{2}-i\,b\,x\right)}\right]-\mathrm{PolyLog}\left[2,\,e^{i\,\left(-i\,a+\frac{\pi}{2}-i\,b\,x\right)}\right]\right)\right)+$$
$$\frac{d\,\mathrm{Sech}[a]\,\mathrm{Sech}[a+b\,x]\,(\mathrm{Cosh}[a]+b\,x\,\mathrm{Sinh}[a])}{2\,b^2}+\frac{d\,x\,\mathrm{Sech}[a]\,\mathrm{Sech}[a+b\,x]^2\,\mathrm{Sinh}[b\,x]}{2\,b}+\frac{c\,\mathrm{Sech}[a+b\,x]\,\mathrm{Tanh}[a+b\,x]}{2\,b}$$

Problem 12: Attempted integration timed out after 120 seconds.

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

Optimal (type 9, 18 leaves, 0 steps):

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

Result (type 1, 1 leaves):

???

Test results for the 84 problems in "6.5.2 (e x)^m (a+b sech(c+d x^n))^p.m"

Problem 10: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 119 leaves, 10 steps):

$$\frac{a^2 x^4}{4}+\frac{2 a b x^2 \text{ArcTan}\left[e^{c+d x^2}\right]}{d}-\frac{b^2 \text{Log}\left[\text{Cosh}\left[c+d x^2\right]\right]}{2 d^2}-\frac{i a b \text{PolyLog}\left[2,-i e^{c+d x^2}\right]}{d^2}+\frac{i a b \text{PolyLog}\left[2, i e^{c+d x^2}\right]}{d^2}+\frac{b^2 x^2 \text{Tanh}\left[c+d x^2\right]}{2 d}$$

Result (type 4, 483 leaves):

$$\frac{x^2 \text{Cosh}\left[c+d x^2\right]^2 \text{Sech}[c] \left(a+b \text{Sech}\left[c+d x^2\right]\right)^2 \left(a^2 d x^2 \text{Cosh}[c]+2 b^2 \text{Sinh}[c]\right)}{4 d \left(b+a \text{Cosh}\left[c+d x^2\right]\right)^2}-$$
$$\left(b^2 \text{Cosh}\left[c+d x^2\right]^2 \text{Sech}[c] \left(a+b \text{Sech}\left[c+d x^2\right]\right)^2 \left(\text{Cosh}[c] \text{Log}\left[\text{Cosh}[c] \text{Cosh}\left[d x^2\right]+\text{Sinh}[c] \text{Sinh}\left[d x^2\right]\right]-d x^2 \text{Sinh}[c]\right)\right) \Big/$$
$$\left(2 d^2 \left(b+a \text{Cosh}\left[c+d x^2\right]\right)^2 \left(\text{Cosh}[c]^2-\text{Sinh}[c]^2\right)\right)+\frac{1}{d^2 \left(b+a \text{Cosh}\left[c+d x^2\right]\right)^2} a b \text{Cosh}\left[c+d x^2\right]^2 \left(a+b \text{Sech}\left[c+d x^2\right]\right)^2$$
$$\left(-\frac{1}{\sqrt{1-\text{Coth}[c]^2}} i \text{Csch}[c] \left(i \left(d x^2+\text{ArcTanh}[\text{Coth}[c]]\right) \left(\text{Log}\left[1-e^{-d x^2-\text{ArcTanh}[\text{Coth}[c]]}\right]-\text{Log}\left[1+e^{-d x^2-\text{ArcTanh}[\text{Coth}[c]]}\right]\right)+\right.\right.$$
$$\left.\left.i \left(\text{PolyLog}\left[2,-e^{-d x^2-\text{ArcTanh}[\text{Coth}[c]]}\right]-\text{PolyLog}\left[2, e^{-d x^2-\text{ArcTanh}[\text{Coth}[c]]}\right]\right)\right)-\frac{2 \text{ArcTan}\left[\frac{\text{Sinh}[c]+\text{Cosh}[c] \text{Tanh}\left[\frac{d x^2}{2}\right]}{\sqrt{\text{Cosh}[c]^2-\text{Sinh}[c]^2}}\right] \text{ArcTanh}[\text{Coth}[c]]}{\sqrt{\text{Cosh}[c]^2-\text{Sinh}[c]^2}}\right)+$$
$$\frac{b^2 x^2 \text{Cosh}\left[c+d x^2\right] \text{Sech}[c] \left(a+b \text{Sech}\left[c+d x^2\right]\right)^2 \text{Sinh}\left[d x^2\right]}{2 d \left(b+a \text{Cosh}\left[c+d x^2\right]\right)^2}-\frac{b^2 x^2 \text{Cosh}\left[c+d x^2\right]^2 \left(a+b \text{Sech}\left[c+d x^2\right]\right)^2 \text{Tanh}[c]}{2 d \left(b+a \text{Cosh}\left[c+d x^2\right]\right)^2}$$

Problem 18: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 241 leaves, 11 steps):

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

Result (type 4, 843 leaves):

$$\frac{1}{4\,a\,\left(a+b\,\mathrm{Sech}\left[c+d\,x^2\right]\right)}\left(b+a\,\mathrm{Cosh}\left[c+d\,x^2\right]\right)$$
$$\left(x^4+\frac{1}{\sqrt{a^2-b^2}\,d^2}2\,b\,\left(2\,\left(c+d\,x^2\right)\,\mathrm{ArcTan}\left[\frac{(a+b)\,\mathrm{Coth}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]}{\sqrt{a^2-b^2}}\right]+2\,\left(c-i\,\mathrm{ArcCos}\left[-\frac{b}{a}\right]\right)\,\mathrm{ArcTan}\left[\frac{(a-b)\,\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.\right.$$
$$\left(\mathrm{ArcCos}\left[-\frac{b}{a}\right]+2\,\left(\mathrm{ArcTan}\left[\frac{(a+b)\,\mathrm{Coth}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]}{\sqrt{a^2-b^2}}\right]+\mathrm{ArcTan}\left[\frac{(a-b)\,\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)\,\mathrm{Log}\left[\frac{\sqrt{a^2-b^2}\,e^{-\frac{c}{2}-\frac{d\,x^2}{2}}}{\sqrt{2}\,\sqrt{a}\,\sqrt{b+a\,\mathrm{Cosh}\left[c+d\,x^2\right]}}\right]+$$
$$\left(\mathrm{ArcCos}\left[-\frac{b}{a}\right]-2\,\left(\mathrm{ArcTan}\left[\frac{(a+b)\,\mathrm{Coth}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]}{\sqrt{a^2-b^2}}\right]+\mathrm{ArcTan}\left[\frac{(a-b)\,\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)\,\mathrm{Log}\left[\frac{\sqrt{a^2-b^2}\,e^{\frac{1}{2}\left(c+d\,x^2\right)}}{\sqrt{2}\,\sqrt{a}\,\sqrt{b+a\,\mathrm{Cosh}\left[c+d\,x^2\right]}}\right]-$$
$$\left(\mathrm{ArcCos}\left[-\frac{b}{a}\right]+2\,\mathrm{ArcTan}\left[\frac{(a-b)\,\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\,\mathrm{Log}\left[\frac{(a+b)\,\left(-a+b+i\,\sqrt{a^2-b^2}\right)\,\left(-1+\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]\right)}{a\,\left(a+b+i\,\sqrt{a^2-b^2}\,\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]\right)}\right]-$$
$$\left(\mathrm{ArcCos}\left[-\frac{b}{a}\right]-2\,\mathrm{ArcTan}\left[\frac{(a-b)\,\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\,\mathrm{Log}\left[\frac{(a+b)\,\left(a-b+i\,\sqrt{a^2-b^2}\right)\,\left(1+\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]\right)}{a\,\left(a+b+i\,\sqrt{a^2-b^2}\,\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]\right)}\right]+$$
$$i\,\left(\mathrm{PolyLog}\left[2,\frac{\left(b-i\,\sqrt{a^2-b^2}\right)\,\left(a+b-i\,\sqrt{a^2-b^2}\,\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]\right)}{a\,\left(a+b+i\,\sqrt{a^2-b^2}\,\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]\right)}\right]-\right.$$
$$\left.\left.\left.\mathrm{PolyLog}\left[2,\frac{\left(b+i\,\sqrt{a^2-b^2}\right)\,\left(a+b-i\,\sqrt{a^2-b^2}\,\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]\right)}{a\,\left(a+b+i\,\sqrt{a^2-b^2}\,\mathrm{Tanh}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]\right)}\right]\right)\right)\right)\,\mathrm{Sech}\left[c+d\,x^2\right]$$

Problem 28: Attempted integration timed out after 120 seconds.

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

Optimal (type 9, 20 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{x \left(a + b \operatorname{Sech}\left[c + d x^2\right]\right)^2}, x\right]$$

Result (type 1, 1 leaves):

???

Problem 29: Attempted integration timed out after 120 seconds.

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

Optimal (type 9, 20 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{x^2 \left(a + b \operatorname{Sech}\left[c + d x^2\right]\right)^2}, x\right]$$

Result (type 1, 1 leaves):

???

Problem 30: Attempted integration timed out after 120 seconds.

$$\int \frac{1}{x^3 \left(a + b \operatorname{Sech}\left[c + d x^2\right]\right)^2} \, dx$$

Optimal (type 9, 20 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{x^3 \left(a + b \operatorname{Sech}\left[c + d x^2\right]\right)^2}, x\right]$$

Result (type 1, 1 leaves):

???

Problem 50: Attempted integration timed out after 120 seconds.

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

Optimal (type 9, 22 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{x\left(a+b\,\text{Sech}\left[c+d\sqrt{x}\right]\right)^2},\,x\right]$$

Result (type 1, 1 leaves):

???

Problem 51: Attempted integration timed out after 120 seconds.

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

Optimal (type 9, 22 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{x^2\left(a+b\,\text{Sech}\left[c+d\sqrt{x}\right]\right)^2},\,x\right]$$

Result (type 1, 1 leaves):

???

Problem 75: Unable to integrate problem.

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

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

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

Result (type 8, 24 leaves):

$$\int (e\,x)^{-1+3n}\left(a+b\,\mathrm{Sech}\left[c+d\,x^n\right]\right)\,dx$$

Problem 78: Unable to integrate problem.

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

Optimal (type 4, 363 leaves, 16 steps):

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

Result (type 8, 26 leaves):

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

Problem 80: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 307 leaves, 12 steps):

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

Result (type 4, 859 leaves):

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

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

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]+2\left(\text{ArcTan}\left[\frac{(a+b)\,\text{Coth}\left[\frac{1}{2}\,(c+d\,x^n)\right]}{\sqrt{a^2-b^2}}\right]+\text{ArcTan}\left[\frac{(a-b)\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x^n)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{a^2-b^2}\;e^{-\frac{c}{2}-\frac{d\,x^n}{2}}}{\sqrt{2}\,\sqrt{a}\,\sqrt{b+a\,\text{Cosh}[c+d\,x^n]}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]-2\left(\text{ArcTan}\left[\frac{(a+b)\,\text{Coth}\left[\frac{1}{2}\,(c+d\,x^n)\right]}{\sqrt{a^2-b^2}}\right]+\text{ArcTan}\left[\frac{(a-b)\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x^n)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{a^2-b^2}\;e^{\frac{1}{2}\,(c+d\,x^n)}}{\sqrt{2}\,\sqrt{a}\,\sqrt{b+a\,\text{Cosh}[c+d\,x^n]}}\right]-$$

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

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

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

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(b+i\,\sqrt{a^2-b^2}\right)\left(a+b-i\,\sqrt{a^2-b^2}\;\text{Tanh}\left[\frac{1}{2}\,(c+d\,x^n)\right]\right)}{a\left(a+b+i\,\sqrt{a^2-b^2}\;\text{Tanh}\left[\frac{1}{2}\,(c+d\,x^n)\right]\right)}\right]\right)\right)\right)\text{Sech}[c+d\,x^n]$$

Problem 81: Unable to integrate problem.

$$\int\frac{(e\,x)^{-1+3\,n}}{a+b\,\text{Sech}[c+d\,x^n]}\,dx$$

Optimal (type 4, 452 leaves, 14 steps):

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

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

Result (type 8, 26 leaves):

$$\int \frac{(e\,x)^{-1+3\,n}}{a+b\,\text{Sech}[c+d\,x^n]}\,dx$$

Problem 83: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 717 leaves, 23 steps):

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

Result (type 4, 2651 leaves):

$$\frac{1}{\left(a^2-b^2\right)^{3/2}d^2\,n\left(a+b\,\text{Sech}[c+d\,x^n]\right)^2}\,2\,b\,x^{1-2n}\,(e\,x)^{-1+2n}\left(b+a\,\text{Cosh}[c+d\,x^n]\right)^2$$
$$\left(2\left(i\,c+i\,d\,x^n\right)\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(i\,c+i\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]-2\left(i\,c+\text{ArcCos}\left[-\frac{b}{a}\right]\right)\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(i\,c+i\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.$$
$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(i\,c+i\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]-\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(i\,c+i\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{a^2-b^2}\,e^{-\frac{1}{2}i\left(i\,c+i\,d\,x^n\right)}}{\sqrt{2}\,\sqrt{a}\,\sqrt{b+a\,\text{Cosh}[c+d\,x^n]}}\right]+$$
$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]+2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(i\,c+i\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]-\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(i\,c+i\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{a^2-b^2}\,e^{\frac{1}{2}i\left(i\,c+i\,d\,x^n\right)}}{\sqrt{2}\,\sqrt{a}\,\sqrt{b+a\,\text{Cosh}[c+d\,x^n]}}\right]-$$
$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]+2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(i\,c+i\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\text{Log}\left[1-\frac{\left(b-i\sqrt{a^2-b^2}\right)\left(a+b-\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(i\,c+i\,d\,x^n\right)\right]\right)}{a\left(a+b+\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(i\,c+i\,d\,x^n\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{b}{a}\right]+2\,\mathrm{i}\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\text{Log}\left[1-\frac{\left(b+\mathrm{i}\sqrt{a^2-b^2}\right)\left(a+b-\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}{a\left(a+b+\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}\right]+$$

$$\mathrm{i}\left(\text{PolyLog}\left[2,\frac{\left(b-\mathrm{i}\sqrt{a^2-b^2}\right)\left(a+b-\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}{a\left(a+b+\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}\right]-\right.$$

$$\left.\left.\text{PolyLog}\left[2,\frac{\left(b+\mathrm{i}\sqrt{a^2-b^2}\right)\left(a+b-\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}{a\left(a+b+\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}\right]\right)\right)\text{Sech}\left[c+d\,x^n\right]^2-$$

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

$$\left(2\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]-2\left(\mathrm{i}\,c+\text{ArcCos}\left[-\frac{b}{a}\right]\right)\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.$$

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]-2\,\mathrm{i}\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]-\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{a^2-b^2}\,e^{-\frac{1}{2}\mathrm{i}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)}}{\sqrt{2}\,\sqrt{a}\,\sqrt{b+a\,\text{Cosh}\left[c+d\,x^n\right]}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]+2\,\mathrm{i}\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]-\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{a^2-b^2}\,e^{\frac{1}{2}\mathrm{i}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)}}{\sqrt{2}\,\sqrt{a}\,\sqrt{b+a\,\text{Cosh}\left[c+d\,x^n\right]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]+2\,\mathrm{i}\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\text{Log}\left[1-\frac{\left(b-\mathrm{i}\sqrt{a^2-b^2}\right)\left(a+b-\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}{a\left(a+b+\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{b}{a}\right]+2\,\mathrm{i}\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]}{\sqrt{a^2-b^2}}\right]\right)\text{Log}\left[1-\frac{\left(b+\mathrm{i}\sqrt{a^2-b^2}\right)\left(a+b-\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}{a\left(a+b+\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}\right]+$$

$$\mathrm{i}\left(\text{PolyLog}\left[2,\frac{\left(b-\mathrm{i}\sqrt{a^2-b^2}\right)\left(a+b-\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}{a\left(a+b+\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}\right]-\right.$$

$$\left.\left.\text{PolyLog}\left[2,\frac{\left(b+\mathrm{i}\sqrt{a^2-b^2}\right)\left(a+b-\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}{a\left(a+b+\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}\left(\mathrm{i}\,c+\mathrm{i}\,d\,x^n\right)\right]\right)}\right]\right)\right)\text{Sech}\left[c+d\,x^n\right]^2+$$

$$\left(x^{1-n}\,(e\,x)^{-1+2n}\left(b+a\,\text{Cosh}\left[c+d\,x^n\right]\right)^2\text{Sech}[c]\,\text{Sech}\left[c+d\,x^n\right]^2\left(a^2\,d\,x^n\,\text{Cosh}[c]-b^2\,d\,x^n\,\text{Cosh}[c]+2\,b^2\,\text{Sinh}[c]\right)\right)\Big/$$

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

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

$$\left.\left(a \operatorname{Cosh}[c] \operatorname{Log}\left[b + a \operatorname{Cosh}[c] \operatorname{Cosh}[d x^n] + a \operatorname{Sinh}[c] \operatorname{Sinh}[d x^n]\right] - a d x^n \operatorname{Sinh}[c] + \frac{2 a b \operatorname{ArcTan}\left[\frac{a \operatorname{Sinh}[c] + (-b + a \operatorname{Cosh}[c]) \operatorname{Tanh}\left[\frac{d x^n}{2}\right]}{\sqrt{-b^2 + a^2 \operatorname{Cosh}[c]^2 - a^2 \operatorname{Sinh}[c]^2}}\right] \operatorname{Sinh}[c]}{\sqrt{-b^2 + a^2 \operatorname{Cosh}[c]^2 - a^2 \operatorname{Sinh}[c]^2}}\right)\right) \Big/$$

$$\left(a (a^2 - b^2) d^2 n \left(a + b \operatorname{Sech}[c + d x^n]\right)^2 \left(a^2 \operatorname{Cosh}[c]^2 - a^2 \operatorname{Sinh}[c]^2\right)\right) +$$

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

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

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

Problem 84: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 1284 leaves, 32 steps) :

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

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

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

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

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

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

Result (type 1, 1 leaves):

???

Test results for the 201 problems in "6.5.3 Hyperbolic secant functions.m"

Problem 27: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 11 leaves, 2 steps):

$$\frac{\text{ArcSin}[\text{Tanh}[a+b x]]}{b}$$

Result (type 3, 34 leaves):

$$\frac{2\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,(a+b\,x)\right]\right]\,\text{Cosh}[a+b\,x]\,\sqrt{\text{Sech}[a+b\,x]^2}}{b}$$

Problem 79: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 66 leaves, 4 steps):

$$\frac{2\,a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Tanh}[c+d\,x]}{\sqrt{a+a\,\text{Sech}[c+d\,x]}}\right]}{d}+\frac{2\,a^2\,\text{Tanh}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sech}[c+d\,x]}}$$

Result (type 3, 135 leaves):

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

Problem 80: Result more than twice size of optimal antiderivative.

$$\int \sqrt{a+a\,\text{Sech}[c+d\,x]}\,dx$$

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

$$\frac{2\,\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Tanh}[c+d\,x]}{\sqrt{a+a\,\text{Sech}[c+d\,x]}}\right]}{d}$$

Result (type 3, 77 leaves):

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

Problem 82: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{(a+a\,\text{Sech}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 114 leaves, 6 steps):

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

Result (type 3, 231 leaves):

$$\left(\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\text{Sech}[c+d\,x]^{3/2}\right.$$
$$\left(\sqrt{2}\,e^{\frac{1}{2}\,(-c-d\,x)}\,\sqrt{\frac{e^{c+d\,x}}{1+e^{2\,(c+d\,x)}}}\,\sqrt{1+e^{2\,(c+d\,x)}}\,\left(4\,c+4\,d\,x+4\,\text{ArcSinh}\left[e^{c+d\,x}\right]-5\,\sqrt{2}\,\text{Log}\left[1+e^{c+d\,x}\right]-4\,\text{Log}\left[1+\sqrt{1+e^{2\,(c+d\,x)}}\,\right]+\right.\right.$$
$$\left.\left.\left.5\,\sqrt{2}\,\text{Log}\left[1-e^{c+d\,x}+\sqrt{2}\,\sqrt{1+e^{2\,(c+d\,x)}}\,\right]\right)-\frac{2\,\text{Sech}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{\text{Sech}[c+d\,x]}}\right)\right)\Big/\left(2\,d\,\left(a\,\left(1+\text{Sech}[c+d\,x]\right)\right)^{3/2}\right)$$

Problem 85: Result more than twice size of optimal antiderivative.

$$\int\sqrt{3+3\,\text{Sech}[x]}\;dx$$

Optimal (type 3, 19 leaves, 2 steps):

$$2\,\sqrt{3}\,\text{ArcTanh}\left[\frac{\text{Tanh}[x]}{\sqrt{1+\text{Sech}[x]}}\right]$$

Result (type 3, 54 leaves):

$$\frac{\sqrt{3}\,\sqrt{1+e^{2\,x}}\,\left(x+\text{ArcSinh}\left[e^x\right]-\text{Log}\left[1+\sqrt{1+e^{2\,x}}\,\right]\right)\,\sqrt{1+\text{Sech}[x]}}{1+e^x}$$

Problem 86: Result more than twice size of optimal antiderivative.

$$\int\sqrt{3-3\,\text{Sech}[x]}\;dx$$

Optimal (type 3, 21 leaves, 2 steps):

$$2\,\sqrt{3}\,\text{ArcTanh}\left[\frac{\text{Tanh}[x]}{\sqrt{1-\text{Sech}[x]}}\right]$$

Result (type 3, 56 leaves):

$$\frac{\sqrt{3}\,\sqrt{1+e^{2x}}\,\left(-x+\text{ArcSinh}[e^x]+\text{Log}\left[1+\sqrt{1+e^{2x}}\right]\right)\sqrt{1-\text{Sech}[x]}}{-1+e^x}$$

Problem 94: Unable to integrate problem.

$$\int \frac{1}{\sqrt{a+b\,\text{Sech}[c+d\,x]}}\,dx$$

Optimal (type 4, 106 leaves, 1 step):

$$\frac{2\sqrt{a+b}\;\text{Coth}[c+d\,x]\;\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d\,x])}{a-b}}}{a\,d}$$

Result (type 8, 16 leaves):

$$\int \frac{1}{\sqrt{a+b\,\text{Sech}[c+d\,x]}}\,dx$$

Problem 129: Result more than twice size of optimal antiderivative.

$$\int \text{Coth}[c+d\,x]^3\,\sqrt{a+b\,\text{Sech}[c+d\,x]}\,dx$$

Optimal (type 3, 217 leaves, 13 steps):

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

Result (type 3, 844 leaves):

$$
\begin{aligned}
&\frac{\left(-\frac{1}{2}-\frac{1}{2}\text{Csch}[c+d x]^2\right)\sqrt{a+b\,\text{Sech}[c+d x]}}{d}+\frac{1}{4 d\sqrt{b+a\,\text{Cosh}[c+d x]}\,\sqrt{\text{Sech}[c+d x]}}\\
&\Bigg(\Bigg(3 b\left(\sqrt{a-b}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{b+a\,\text{Cosh}[c+d x]}}{\sqrt{-a-b}\,\sqrt{a\,\text{Cosh}[c+d x]}}\right]+\sqrt{-a-b}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{b+a\,\text{Cosh}[c+d x]}}{\sqrt{a-b}\,\sqrt{a\,\text{Cosh}[c+d x]}}\right]\right)\sqrt{\frac{-a+a\,\text{Cosh}[c+d x]}{a+a\,\text{Cosh}[c+d x]}}\,\left(a+a\,\text{Cosh}[c+d x]\right)\Bigg)\Big/\\
&\quad\left(\sqrt{a}\,\sqrt{-a-b}\,\sqrt{a-b}\,\sqrt{-1+\text{Cosh}[c+d x]}\,\sqrt{a\,\text{Cosh}[c+d x]}\,\sqrt{1+\text{Cosh}[c+d x]}\,\sqrt{\text{Sech}[c+d x]}\right)+\\
&\quad\Bigg(2\left(\sqrt{a-b}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{b+a\,\text{Cosh}[c+d x]}}{\sqrt{-a-b}\,\sqrt{a\,\text{Cosh}[c+d x]}}\right]-\sqrt{-a-b}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{b+a\,\text{Cosh}[c+d x]}}{\sqrt{a-b}\,\sqrt{a\,\text{Cosh}[c+d x]}}\right]\right)\sqrt{a\,\text{Cosh}[c+d x]}\\
&\quad\quad\sqrt{\frac{-a+a\,\text{Cosh}[c+d x]}{a+a\,\text{Cosh}[c+d x]}}\,\left(a+a\,\text{Cosh}[c+d x]\right)\sqrt{\text{Sech}[c+d x]}\Bigg)\Big/\left(\sqrt{a}\,\sqrt{-a-b}\,\sqrt{a-b}\,\sqrt{-1+\text{Cosh}[c+d x]}\,\sqrt{1+\text{Cosh}[c+d x]}\right)+\\
&\quad\Bigg(2 a\left(\sqrt{-a-b}\left(-4\sqrt{a-b}\,\text{ArcTan}\left[\frac{\sqrt{b+a\,\text{Cosh}[c+d x]}}{\sqrt{-a\,\text{Cosh}[c+d x]}}\right]+\sqrt{a}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{b+a\,\text{Cosh}[c+d x]}}{\sqrt{a-b}\,\sqrt{-a\,\text{Cosh}[c+d x]}}\right]\right)-\right.\\
&\quad\quad\left.\sqrt{a}\,\sqrt{a-b}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{b+a\,\text{Cosh}[c+d x]}}{\sqrt{-a-b}\,\sqrt{-a\,\text{Cosh}[c+d x]}}\right]\right)\sqrt{-a\,\text{Cosh}[c+d x]}\,\sqrt{\frac{-a+a\,\text{Cosh}[c+d x]}{a+a\,\text{Cosh}[c+d x]}}\\
&\quad\quad\left(a+a\,\text{Cosh}[c+d x]\right)\text{Cosh}[2\,(c+d x)]\,\sqrt{\text{Sech}[c+d x]}\Bigg)\Big/\left(\sqrt{-a-b}\,\sqrt{a-b}\,\sqrt{-1+\text{Cosh}[c+d x]}\,\sqrt{1+\text{Cosh}[c+d x]}\right.\\
&\quad\quad\left.\left(a^2-2 b^2+4 b\,(b+a\,\text{Cosh}[c+d x])-2\,(b+a\,\text{Cosh}[c+d x])^2\right)\right)\Bigg)\sqrt{a+b\,\text{Sech}[c+d x]}
\end{aligned}
$$

Problem 130: Attempted integration timed out after 120 seconds.

$$\int\sqrt{a+b\,\text{Sech}[c+d x]}\,\text{Tanh}[c+d x]^2\,dx$$

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

$$-\frac{1}{3 b^2 d}2 a (a-b) \sqrt{a+b} \operatorname{Coth}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sech}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sech}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sech}[c+d x])}{a-b}} - \frac{1}{3 b d}$$

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

$$\frac{2 \sqrt{a+b} \operatorname{Coth}[c+d x] \operatorname{EllipticPi}\left[\frac{a+b}{a}, \operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sech}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sech}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sech}[c+d x])}{a-b}}}{d} - \frac{2 \sqrt{a+b \operatorname{Sech}[c+d x]} \operatorname{Tanh}[c+d x]}{3 d}$$

Result (type 1, 1 leaves):

???

Problem 131: Unable to integrate problem.

$$\int \sqrt{a+b \operatorname{Sech}[c+d x]} \, dx$$

Optimal (type 4, 125 leaves, 1 step):

$$\frac{1}{\sqrt{a+b} d}2 \operatorname{Coth}[c+d x] \operatorname{EllipticPi}\left[\frac{a}{a+b}, \operatorname{ArcSin}\left[\frac{\sqrt{a+b}}{\sqrt{a+b \operatorname{Sech}[c+d x]}}\right], \frac{a-b}{a+b}\right]$$

$$\sqrt{-\frac{b (1-\operatorname{Sech}[c+d x])}{a+b \operatorname{Sech}[c+d x]}} \sqrt{\frac{b (1+\operatorname{Sech}[c+d x])}{a+b \operatorname{Sech}[c+d x]}} (a+b \operatorname{Sech}[c+d x])$$

Result (type 8, 16 leaves):

$$\int \sqrt{a+b \operatorname{Sech}[c+d x]} \, dx$$

Problem 132: Attempted integration timed out after 120 seconds.

$$\int \operatorname{Coth}[c+d x]^2 \sqrt{a+b \operatorname{Sech}[c+d x]} \, dx$$

Optimal (type 4, 246 leaves, 5 steps):

$$\frac{\sqrt{a+b}\ \text{Coth}[c+d\,x]\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b}}\ \sqrt{-\frac{b\,(1+\text{Sech}[c+d\,x])}{a-b}}}{d}-\frac{\text{Coth}[c+d\,x]\ \sqrt{a+b\,\text{Sech}[c+d\,x]}}{d}+\frac{1}{\sqrt{a+b}\ d}$$

$$2\,\text{Coth}[c+d\,x]\ \text{EllipticPi}\left[\frac{a}{a+b},\text{ArcSin}\left[\frac{\sqrt{a+b}}{\sqrt{a+b\,\text{Sech}[c+d\,x]}}\right],\frac{a-b}{a+b}\right]\sqrt{-\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b\,\text{Sech}[c+d\,x]}}\ \sqrt{\frac{b\,(1+\text{Sech}[c+d\,x])}{a+b\,\text{Sech}[c+d\,x]}}\ (a+b\,\text{Sech}[c+d\,x])$$

Result (type 1, 1 leaves):

???

Problem 135: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Tanh}[c+d\,x]}{\sqrt{a+b\,\text{Sech}[c+d\,x]}}\,dx$$

Optimal (type 3, 31 leaves, 3 steps):

$$\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a}}\right]}{\sqrt{a}\ d}$$

Result (type 3, 82 leaves):

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

Problem 136: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Coth}[c+d\,x]}{\sqrt{a+b\,\text{Sech}[c+d\,x]}}\,dx$$

Optimal (type 3, 106 leaves, 7 steps):

$$\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a}}\right]}{\sqrt{a}\ d}-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a-b}}\right]}{\sqrt{a-b}\ d}-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right]}{\sqrt{a+b}\ d}$$

Result (type 3, 419 leaves):

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

Problem 137: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 925 leaves):

$$
\begin{aligned}
&\frac{1}{4\,(a-b)\,(a+b)\,d\,\sqrt{a+b\,\mathrm{Sech}[c+d\,x]}}\\
&\quad\sqrt{b+a\,\mathrm{Cosh}[c+d\,x]}\,\Bigg(\Bigg(\sqrt{a}\,b\,\Bigg(\sqrt{a-b}\,\mathrm{ArcTan}\Big[\frac{\sqrt{a}\,\sqrt{b+a\,\mathrm{Cosh}[c+d\,x]}}{\sqrt{-a-b}\,\sqrt{a\,\mathrm{Cosh}[c+d\,x]}}\Big]+\sqrt{-a-b}\,\mathrm{ArcTanh}\Big[\frac{\sqrt{a}\,\sqrt{b+a\,\mathrm{Cosh}[c+d\,x]}}{\sqrt{a-b}\,\sqrt{a\,\mathrm{Cosh}[c+d\,x]}}\Big]\Bigg)\sqrt{\frac{-a+a\,\mathrm{Cosh}[c+d\,x]}{a+a\,\mathrm{Cosh}[c+d\,x]}}\\
&\qquad(a+a\,\mathrm{Cosh}[c+d\,x])\Bigg)\Big/\Big(\sqrt{-a-b}\,\sqrt{a-b}\,\sqrt{-1+\mathrm{Cosh}[c+d\,x]}\,\sqrt{a\,\mathrm{Cosh}[c+d\,x]}\,\sqrt{1+\mathrm{Cosh}[c+d\,x]}\,\sqrt{\mathrm{Sech}[c+d\,x]}\Big)+\\
&\quad\Bigg((2\,a^2-3\,b^2)\Bigg(\sqrt{a-b}\,\mathrm{ArcTan}\Big[\frac{\sqrt{a}\,\sqrt{b+a\,\mathrm{Cosh}[c+d\,x]}}{\sqrt{-a-b}\,\sqrt{a\,\mathrm{Cosh}[c+d\,x]}}\Big]-\sqrt{-a-b}\,\mathrm{ArcTanh}\Big[\frac{\sqrt{a}\,\sqrt{b+a\,\mathrm{Cosh}[c+d\,x]}}{\sqrt{a-b}\,\sqrt{a\,\mathrm{Cosh}[c+d\,x]}}\Big]\Bigg)\sqrt{a\,\mathrm{Cosh}[c+d\,x]}\\
&\qquad\sqrt{\frac{-a+a\,\mathrm{Cosh}[c+d\,x]}{a+a\,\mathrm{Cosh}[c+d\,x]}}\,(a+a\,\mathrm{Cosh}[c+d\,x])\,\sqrt{\mathrm{Sech}[c+d\,x]}\Bigg)\Big/\Big(a^{3/2}\,\sqrt{-a-b}\,\sqrt{a-b}\,\sqrt{-1+\mathrm{Cosh}[c+d\,x]}\,\sqrt{1+\mathrm{Cosh}[c+d\,x]}\Big)+\\
&\quad\Bigg((2\,a^2-2\,b^2)\Bigg(\sqrt{-a-b}\,\Bigg(-4\,\sqrt{a-b}\,\mathrm{ArcTan}\Big[\frac{\sqrt{b+a\,\mathrm{Cosh}[c+d\,x]}}{\sqrt{-a\,\mathrm{Cosh}[c+d\,x]}}\Big]+\sqrt{a}\,\mathrm{ArcTan}\Big[\frac{\sqrt{a}\,\sqrt{b+a\,\mathrm{Cosh}[c+d\,x]}}{\sqrt{a-b}\,\sqrt{-a\,\mathrm{Cosh}[c+d\,x]}}\Big]\Bigg)-\sqrt{a}\,\sqrt{a-b}\,\mathrm{ArcTanh}\Big[\\
&\qquad\frac{\sqrt{a}\,\sqrt{b+a\,\mathrm{Cosh}[c+d\,x]}}{\sqrt{-a-b}\,\sqrt{-a\,\mathrm{Cosh}[c+d\,x]}}\Big]\Bigg)\sqrt{-a\,\mathrm{Cosh}[c+d\,x]}\,\sqrt{\frac{-a+a\,\mathrm{Cosh}[c+d\,x]}{a+a\,\mathrm{Cosh}[c+d\,x]}}\,(a+a\,\mathrm{Cosh}[c+d\,x])\,\mathrm{Cosh}[2\,(c+d\,x)]\,\sqrt{\mathrm{Sech}[c+d\,x]}\Bigg)\Big/\\
&\qquad\Big(\sqrt{-a-b}\,\sqrt{a-b}\,\sqrt{-1+\mathrm{Cosh}[c+d\,x]}\,\sqrt{1+\mathrm{Cosh}[c+d\,x]}\,\big(a^2-2\,b^2+4\,b\,(b+a\,\mathrm{Cosh}[c+d\,x])-2\,(b+a\,\mathrm{Cosh}[c+d\,x])^2\big)\Big)\Bigg)\\
&\quad\sqrt{\mathrm{Sech}[c+d\,x]}+\frac{(b+a\,\mathrm{Cosh}[c+d\,x])\left(-\frac{a}{2\,(a^2-b^2)}+\frac{(a-b\,\mathrm{Cosh}[c+d\,x])\,\mathrm{Csch}[c+d\,x]^2}{2\,(-a^2+b^2)}\right)\mathrm{Sech}[c+d\,x]}{d\,\sqrt{a+b\,\mathrm{Sech}[c+d\,x]}}
\end{aligned}
$$

Problem 138: Attempted integration timed out after 120 seconds.

$$\int\frac{\mathrm{Tanh}[c+d\,x]^4}{\sqrt{a+b\,\mathrm{Sech}[c+d\,x]}}\,dx$$

Optimal (type 4, 610 leaves, 11 steps):

$$-\frac{1}{b^2 d}4\,(a-b)\,\sqrt{a+b}\,\text{Coth}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}+\frac{1}{15\,b^4\,d}$$

$$2\,(a-b)\,\sqrt{a+b}\,\left(8\,a^2+9\,b^2\right)\text{Coth}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}-$$

$$\frac{4\,\sqrt{a+b}\,\text{Coth}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{b\,d}+\frac{1}{15\,b^3\,d}$$

$$2\,\sqrt{a+b}\,\left(8\,a^2-2\,a\,b+9\,b^2\right)\text{Coth}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}+$$

$$\frac{2\,\sqrt{a+b}\,\text{Coth}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{a\,d}-$$

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

Result (type 1, 1 leaves):

???

Problem 139: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 310 leaves, 6 steps):

$$-\frac{1}{b^2 d}2\,(a-b)\,\sqrt{a+b}\,\text{Coth}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}-$$

$$\frac{2\,\sqrt{a+b}\,\text{Coth}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{b\,d}+$$

$$\frac{2\,\sqrt{a+b}\,\text{Coth}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{a\,d}$$

Result (type 1, 1 leaves):

???

Problem 140: Unable to integrate problem.

$$\int \frac{1}{\sqrt{a + b \,\text{Sech}[c + d\, x]}} \, dx$$

Optimal (type 4, 106 leaves, 1 step):

$$\frac{2 \sqrt{a+b}\, \text{Coth}[c+d\,x]\, \text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sech}[c+d\,x])}{a-b}}}{a\, d}$$

Result (type 8, 16 leaves):

$$\int \frac{1}{\sqrt{a + b \,\text{Sech}[c + d\, x]}} \, dx$$

Problem 141: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 362 leaves, 9 steps):

$$\frac{\text{Coth}[c+d\,x]\, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sech}[c+d\,x])}{a-b}}}{\sqrt{a+b}\, d} -$$

$$\frac{\text{Coth}[c+d\,x]\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sech}[c+d\,x])}{a-b}}}{\sqrt{a+b}\, d} +$$

$$\frac{2 \sqrt{a+b}\, \text{Coth}[c+d\,x]\, \text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sech}[c+d\,x])}{a-b}}}{a\, d} -$$

$$\frac{\text{Coth}[c+d\,x]}{d \sqrt{a+b\,\text{Sech}[c+d\,x]}} - \frac{b^2\, \text{Tanh}[c+d\,x]}{\left(a^2-b^2\right) d \sqrt{a+b\,\text{Sech}[c+d\,x]}}$$

Result (type 1, 1 leaves):

???

Problem 145: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 142 leaves, 7 steps):

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

Result (type 3, 927 leaves):

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

$$\Bigg(-\Bigg(\Bigg(2\sqrt{a}\,b\left(\sqrt{a-b}\,\text{ArcTan}\left[\frac{\sqrt{a}\sqrt{b+a\,\text{Cosh}[c+dx]}}{\sqrt{-a-b}\sqrt{a\,\text{Cosh}[c+dx]}}\right]+\sqrt{-a-b}\,\text{ArcTanh}\left[\frac{\sqrt{a}\sqrt{b+a\,\text{Cosh}[c+dx]}}{\sqrt{a-b}\sqrt{a\,\text{Cosh}[c+dx]}}\right]\right)\sqrt{\frac{-a+a\,\text{Cosh}[c+dx]}{a+a\,\text{Cosh}[c+dx]}}$$

$$\left(a+a\,\text{Cosh}[c+dx]\right)\Bigg)\Big/\left(\sqrt{-a-b}\sqrt{a-b}\sqrt{-1+\text{Cosh}[c+dx]}\sqrt{a\,\text{Cosh}[c+dx]}\sqrt{1+\text{Cosh}[c+dx]}\sqrt{\text{Sech}[c+dx]}\right)\Bigg)+$$

$$\Bigg(\left(a^2+b^2\right)\left(\sqrt{a-b}\,\text{ArcTan}\left[\frac{\sqrt{a}\sqrt{b+a\,\text{Cosh}[c+dx]}}{\sqrt{-a-b}\sqrt{a\,\text{Cosh}[c+dx]}}\right]-\sqrt{-a-b}\,\text{ArcTanh}\left[\frac{\sqrt{a}\sqrt{b+a\,\text{Cosh}[c+dx]}}{\sqrt{a-b}\sqrt{a\,\text{Cosh}[c+dx]}}\right]\right)\sqrt{a\,\text{Cosh}[c+dx]}$$

$$\sqrt{\frac{-a+a\,\text{Cosh}[c+dx]}{a+a\,\text{Cosh}[c+dx]}}\left(a+a\,\text{Cosh}[c+dx]\right)\sqrt{\text{Sech}[c+dx]}\Bigg)\Big/\left(a^{3/2}\sqrt{-a-b}\sqrt{a-b}\sqrt{-1+\text{Cosh}[c+dx]}\sqrt{1+\text{Cosh}[c+dx]}\right)+$$

$$\Bigg(\left(a^2-b^2\right)\Bigg(\sqrt{-a-b}\left(-4\sqrt{a-b}\,\text{ArcTan}\left[\frac{\sqrt{b+a\,\text{Cosh}[c+dx]}}{\sqrt{-a\,\text{Cosh}[c+dx]}}\right]+\sqrt{a}\,\text{ArcTan}\left[\frac{\sqrt{a}\sqrt{b+a\,\text{Cosh}[c+dx]}}{\sqrt{a-b}\sqrt{-a\,\text{Cosh}[c+dx]}}\right]\right)-\sqrt{a}\sqrt{a-b}\,\text{ArcTanh}\Bigg[$$

$$\frac{\sqrt{a}\sqrt{b+a\,\text{Cosh}[c+dx]}}{\sqrt{-a-b}\sqrt{-a\,\text{Cosh}[c+dx]}}\Bigg]\Bigg)\sqrt{-a\,\text{Cosh}[c+dx]}\sqrt{\frac{-a+a\,\text{Cosh}[c+dx]}{a+a\,\text{Cosh}[c+dx]}}\left(a+a\,\text{Cosh}[c+dx]\right)\text{Cosh}[2(c+dx)]\sqrt{\text{Sech}[c+dx]}\Bigg)\Big/$$

$$\left(\sqrt{-a-b}\sqrt{a-b}\sqrt{-1+\text{Cosh}[c+dx]}\sqrt{1+\text{Cosh}[c+dx]}\left(a^2-2b^2+4b\left(b+a\,\text{Cosh}[c+dx]\right)-2\left(b+a\,\text{Cosh}[c+dx]\right)^2\right)\right)\Bigg)\text{Sech}[c+dx]^{3/2}+$$

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

Problem 146: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 316 leaves, 11 steps) :

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

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

Result (type 3, 1019 leaves) :

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

$$\Bigg(\Bigg(\left(-a^3\,b+7\,a\,b^3\right)\left(\sqrt{a-b}\;\text{ArcTan}\Big[\frac{\sqrt{a}\;\sqrt{b+a\,\text{Cosh}[c+d\,x]}}{\sqrt{-a-b}\;\sqrt{a\,\text{Cosh}[c+d\,x]}}\Big]+\sqrt{-a-b}\;\text{ArcTanh}\Big[\frac{\sqrt{a}\;\sqrt{b+a\,\text{Cosh}[c+d\,x]}}{\sqrt{a-b}\;\sqrt{a\,\text{Cosh}[c+d\,x]}}\Big]\right)\sqrt{\frac{-a+a\,\text{Cosh}[c+d\,x]}{a+a\,\text{Cosh}[c+d\,x]}}$$

$$(a+a\,\text{Cosh}[c+d\,x])\Bigg)\Big/\left(\sqrt{a}\;\sqrt{-a-b}\;\sqrt{a-b}\;\sqrt{-1+\text{Cosh}[c+d\,x]}\;\sqrt{a\,\text{Cosh}[c+d\,x]}\;\sqrt{1+\text{Cosh}[c+d\,x]}\;\sqrt{\text{Sech}[c+d\,x]}\right)+$$

$$\Bigg(\left(2\,a^4-6\,a^2\,b^2-2\,b^4\right)\left(\sqrt{a-b}\;\text{ArcTan}\Big[\frac{\sqrt{a}\;\sqrt{b+a\,\text{Cosh}[c+d\,x]}}{\sqrt{-a-b}\;\sqrt{a\,\text{Cosh}[c+d\,x]}}\Big]-\sqrt{-a-b}\;\text{ArcTanh}\Big[\frac{\sqrt{a}\;\sqrt{b+a\,\text{Cosh}[c+d\,x]}}{\sqrt{a-b}\;\sqrt{a\,\text{Cosh}[c+d\,x]}}\Big]\right)\sqrt{a\,\text{Cosh}[c+d\,x]}$$

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

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

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

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

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

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

Problem 147: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Tanh}[c+d\,x]^4}{(a+b\,\text{Sech}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 907 leaves, 17 steps):

$$-\frac{2\,\text{Coth}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d\,x])}{a-b}}}{a\,\sqrt{a+b}\,d}+$$

$$\frac{4\,a\,\text{Coth}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d\,x])}{a-b}}}{b^2\,\sqrt{a+b}\,d}-\frac{1}{3\,b^4\,\sqrt{a+b}\,d}$$

$$2\,a\,\left(8\,a^2-5\,b^2\right)\,\text{Coth}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sech}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sech}[c+d\,x]\right)}{a-b}}+$$

$$\frac{2\,\text{Coth}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d\,x])}{a-b}}}{a\,\sqrt{a+b}\,d}+$$

$$\frac{4\,\text{Coth}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d\,x])}{a-b}}}{b\,\sqrt{a+b}\,d}-\frac{1}{3\,b^3\,\sqrt{a+b}\,d}$$

$$2\,(2\,a+b)\,(4\,a+b)\,\text{Coth}[c+d\,x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,\left(1-\text{Sech}[c+d\,x]\right)}{a+b}}\,\sqrt{-\frac{b\,\left(1+\text{Sech}[c+d\,x]\right)}{a-b}}+$$

$$\frac{2\,\sqrt{a+b}\,\text{Coth}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d\,x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d\,x])}{a-b}}}{a^2\,d}-\frac{4\,a\,\text{Tanh}[c+d\,x]}{\left(a^2-b^2\right)\,d\,\sqrt{a+b\,\text{Sech}[c+d\,x]}}+$$

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

Result (type 1, 1 leaves):

???

Problem 148: Attempted integration timed out after 120 seconds.

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

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

$$\frac{1}{a b^2 d} 2 (a-b) \sqrt{a+b} \, \text{Coth}[c+d x] \, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}} +$$

$$\frac{2 \sqrt{a+b} \, \text{Coth}[c+d x] \, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{a b d} +$$

$$\frac{2 \sqrt{a+b} \, \text{Coth}[c+d x] \, \text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{a^2 d} - \frac{2\,\text{Tanh}[c+d x]}{a d \sqrt{a+b\,\text{Sech}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 149: Attempted integration timed out after 120 seconds.

$$\int \frac{1}{(a+b\,\text{Sech}[c+d x])^{3/2}} \, dx$$

Optimal (type 4, 347 leaves, 6 steps):

$$-\frac{2\,\text{Coth}[c+d x] \, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{a \sqrt{a+b} \, d} +$$

$$\frac{2\,\text{Coth}[c+d x] \, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{a \sqrt{a+b} \, d} +$$

$$\frac{2 \sqrt{a+b} \, \text{Coth}[c+d x] \, \text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}} \sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{a^2 d} + \frac{2 b^2\,\text{Tanh}[c+d x]}{a \left(a^2-b^2\right) d \sqrt{a+b\,\text{Sech}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 150: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 665 leaves, 14 steps):

$$\frac{4\,a\,\text{Coth}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{(a-b)\,(a+b)^{3/2}\,d}-$$

$$\frac{2\,\text{Coth}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{a\,\sqrt{a+b}\,d}-$$

$$\frac{(3\,a-b)\,\text{Coth}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{(a-b)\,(a+b)^{3/2}\,d}+$$

$$\frac{2\,\text{Coth}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{a\,\sqrt{a+b}\,d}+$$

$$\frac{2\,\sqrt{a+b}\,\text{Coth}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sech}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sech}[c+d x])}{a+b}}\,\sqrt{-\frac{b\,(1+\text{Sech}[c+d x])}{a-b}}}{a^2\,d}-$$

$$\frac{\text{Coth}[c+d x]}{d\,(a+b\,\text{Sech}[c+d x])^{3/2}}-\frac{b^2\,\text{Tanh}[c+d x]}{(a^2-b^2)\,d\,(a+b\,\text{Sech}[c+d x])^{3/2}}-\frac{4\,a\,b^2\,\text{Tanh}[c+d x]}{(a^2-b^2)^2\,d\,\sqrt{a+b\,\text{Sech}[c+d x]}}+\frac{2\,b^2\,\text{Tanh}[c+d x]}{a\,(a^2-b^2)\,d\,\sqrt{a+b\,\text{Sech}[c+d x]}}$$

Result (type 1, 1 leaves):

???

Problem 158: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^5}{\sqrt{\text{Sech}[2\,\text{Log}[c x]]}}\,dx$$

Optimal (type 4, 108 leaves, 6 steps):

$$\frac{2 x^2}{21 c^4 \sqrt{\text{Sech}[2 \text{Log}[c x]]}}+\frac{x^6}{7 \sqrt{\text{Sech}[2 \text{Log}[c x]]}}+\frac{\sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}} \left(c^2+\frac{1}{x^2}\right) \text{EllipticF}\left[2 \text{ArcCot}[c x],\frac{1}{2}\right]}{21 c^5 \left(c^4+\frac{1}{x^4}\right) x \sqrt{\text{Sech}[2 \text{Log}[c x]]}}$$

Result (type 4, 120 leaves):

$$\frac{1}{21 \sqrt{2} c^6 \sqrt{c^2 x^2}} \sqrt{\frac{c^2 x^2}{1+c^4 x^4}} \left(\sqrt{c^2 x^2} \left(2+5 c^4 x^4+3 c^8 x^8\right)+2 (-1)^{1/4} \sqrt{1+c^4 x^4} \text{EllipticF}\left[i \text{ArcSinh}\left[(-1)^{1/4} \sqrt{c^2 x^2}\right],-1\right]\right)$$

Problem 160: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^3}{\sqrt{\text{Sech}[2 \text{Log}[c x]]}} \, dx$$

Optimal (type 4, 203 leaves, 8 steps):

$$\frac{2}{5 c^4 \sqrt{\text{Sech}[2 \text{Log}[c x]]}}-\frac{2}{5 c^4 \left(c^2+\frac{1}{x^2}\right) x^2 \sqrt{\text{Sech}[2 \text{Log}[c x]]}}+\frac{x^4}{5 \sqrt{\text{Sech}[2 \text{Log}[c x]]}}+$$

$$\frac{2 \sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}} \left(c^2+\frac{1}{x^2}\right) \text{EllipticE}\left[2 \text{ArcCot}[c x],\frac{1}{2}\right]}{5 c^3 \left(c^4+\frac{1}{x^4}\right) x \sqrt{\text{Sech}[2 \text{Log}[c x]]}}-\frac{\sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}} \left(c^2+\frac{1}{x^2}\right) \text{EllipticF}\left[2 \text{ArcCot}[c x],\frac{1}{2}\right]}{5 c^3 \left(c^4+\frac{1}{x^4}\right) x \sqrt{\text{Sech}[2 \text{Log}[c x]]}}$$

Result (type 4, 155 leaves):

$$\frac{1}{5 \sqrt{2} c^4 \sqrt{c^2 x^2}} \sqrt{\frac{c^2 x^2}{1+c^4 x^4}} \left(\left(c^2 x^2\right)^{3/2} \left(1+c^4 x^4\right)-\right.$$
$$\left.2 (-1)^{3/4} \sqrt{1+c^4 x^4} \text{EllipticE}\left[i \text{ArcSinh}\left[(-1)^{1/4} \sqrt{c^2 x^2}\right],-1\right]+2 (-1)^{3/4} \sqrt{1+c^4 x^4} \text{EllipticF}\left[i \text{ArcSinh}\left[(-1)^{1/4} \sqrt{c^2 x^2}\right],-1\right]\right)$$

Problem 162: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x}{\sqrt{\text{Sech}[2 \text{Log}[c x]]}} \, dx$$

Optimal (type 4, 87 leaves, 5 steps):

$$\frac{x^2}{3\sqrt{\text{Sech}[2\,\text{Log}[c\,x]]}}-\frac{\sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}}\,\left(c^2+\frac{1}{x^2}\right)\,\text{EllipticF}\left[2\,\text{ArcCot}[c\,x],\,\frac{1}{2}\right]}{3\,c\,\left(c^4+\frac{1}{x^4}\right)\,x\,\sqrt{\text{Sech}[2\,\text{Log}[c\,x]]}}$$

Result (type 4, 107 leaves):

$$\frac{x^2\,\sqrt{\frac{c^2\,x^2}{2+2\,c^4\,x^4}}\,\left(\sqrt{c^2\,x^2}\,\left(1+c^4\,x^4\right)-2\,(-1)^{1/4}\,\sqrt{1+c^4\,x^4}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{c^2\,x^2}\right],\,-1\right]\right)}{3\,\left(c^2\,x^2\right)^{3/2}}$$

Problem 166: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\sqrt{\text{Sech}[2\,\text{Log}[c\,x]]}}{x^3}\,dx$$

Optimal (type 4, 137 leaves, 6 steps):

$$-\frac{\left(c^4+\frac{1}{x^4}\right)\,\sqrt{\text{Sech}[2\,\text{Log}[c\,x]]}}{c^2+\frac{1}{x^2}}+c\,\sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}}\,\left(c^2+\frac{1}{x^2}\right)\,x\,\text{EllipticE}\left[2\,\text{ArcCot}[c\,x],\,\frac{1}{2}\right]\,\sqrt{\text{Sech}[2\,\text{Log}[c\,x]]}-$$
$$\frac{1}{2}\,c\,\sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}}\,\left(c^2+\frac{1}{x^2}\right)\,x\,\text{EllipticF}\left[2\,\text{ArcCot}[c\,x],\,\frac{1}{2}\right]\,\sqrt{\text{Sech}[2\,\text{Log}[c\,x]]}$$

Result (type 4, 53 leaves):

$$-c^2\,\sqrt{\text{Cosh}[2\,\text{Log}[c\,x]]}\,\left(\sqrt{\text{Cosh}[2\,\text{Log}[c\,x]]}+\mathrm{i}\,\text{EllipticE}[\mathrm{i}\,\text{Log}[c\,x],\,2]\right)\,\sqrt{\text{Sech}[2\,\text{Log}[c\,x]]}$$

Problem 168: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\sqrt{\text{Sech}[2\,\text{Log}[c\,x]]}}{x^5}\,dx$$

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

$$-\frac{1}{3}\,\left(c^4+\frac{1}{x^4}\right)\,\sqrt{\text{Sech}[2\,\text{Log}[c\,x]]}+\frac{1}{6}\,c^3\,\sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}}\,\left(c^2+\frac{1}{x^2}\right)\,x\,\text{EllipticF}\left[2\,\text{ArcCot}[c\,x],\,\frac{1}{2}\right]\,\sqrt{\text{Sech}[2\,\text{Log}[c\,x]]}$$

Result (type 4, 117 leaves):

$$\frac{1}{3 x^4 \sqrt{c^2 x^2}}\sqrt{2} \sqrt{\frac{c^2 x^2}{1+c^4 x^4}} \left(-\sqrt{c^2 x^2} \left(1+c^4 x^4\right)+(-1)^{1/4} c^4 x^4 \sqrt{1+c^4 x^4} \,\text{EllipticF}\left[\text{i} \,\text{ArcSinh}\left[(-1)^{1/4} \sqrt{c^2 x^2}\right],-1\right]\right)$$

Problem 170: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^7}{\text{Sech}[2 \,\text{Log}[c x]]^{3/2}} \, dx$$

Optimal (type 4, 141 leaves, 7 steps):

$$\frac{4}{77 c^4 \left(c^4+\frac{1}{x^4}\right) \text{Sech}[2 \,\text{Log}[c x]]^{3/2}}+\frac{6 x^4}{77 \left(c^4+\frac{1}{x^4}\right) \text{Sech}[2 \,\text{Log}[c x]]^{3/2}}+\frac{x^8}{11 \,\text{Sech}[2 \,\text{Log}[c x]]^{3/2}}+\frac{2 \sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}} \left(c^2+\frac{1}{x^2}\right) \text{EllipticF}\left[2 \,\text{ArcCot}[c x],\frac{1}{2}\right]}{77 c^5 \left(c^4+\frac{1}{x^4}\right)^2 x^3 \,\text{Sech}[2 \,\text{Log}[c x]]^{3/2}}$$

Result (type 4, 128 leaves):

$$\frac{1}{154 \sqrt{2} c^8 \sqrt{c^2 x^2}} \sqrt{\frac{c^2 x^2}{1+c^4 x^4}} \left(\sqrt{c^2 x^2} \left(4+17 c^4 x^4+20 c^8 x^8+7 c^{12} x^{12}\right)+4 (-1)^{1/4} \sqrt{1+c^4 x^4} \,\text{EllipticF}\left[\text{i} \,\text{ArcSinh}\left[(-1)^{1/4} \sqrt{c^2 x^2}\right],-1\right]\right)$$

Problem 172: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^5}{\text{Sech}[2 \,\text{Log}[c x]]^{3/2}} \, dx$$

Optimal (type 4, 251 leaves, 9 steps):

$$-\frac{4}{15 c^4 \left(c^4+\frac{1}{x^4}\right) \left(c^2+\frac{1}{x^2}\right) x^4 \,\text{Sech}[2 \,\text{Log}[c x]]^{3/2}}+\frac{4}{15 c^4 \left(c^4+\frac{1}{x^4}\right) x^2 \,\text{Sech}[2 \,\text{Log}[c x]]^{3/2}}+\frac{2 x^2}{15 \left(c^4+\frac{1}{x^4}\right) \text{Sech}[2 \,\text{Log}[c x]]^{3/2}}+$$

$$\frac{x^6}{9 \,\text{Sech}[2 \,\text{Log}[c x]]^{3/2}}+\frac{4 \sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}} \left(c^2+\frac{1}{x^2}\right) \text{EllipticE}\left[2 \,\text{ArcCot}[c x],\frac{1}{2}\right]}{15 c^3 \left(c^4+\frac{1}{x^4}\right)^2 x^3 \,\text{Sech}[2 \,\text{Log}[c x]]^{3/2}}-\frac{2 \sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}} \left(c^2+\frac{1}{x^2}\right) \text{EllipticF}\left[2 \,\text{ArcCot}[c x],\frac{1}{2}\right]}{15 c^3 \left(c^4+\frac{1}{x^4}\right)^2 x^3 \,\text{Sech}[2 \,\text{Log}[c x]]^{3/2}}$$

Result (type 4, 164 leaves):

$$\frac{1}{90\sqrt{2}\,c^6\sqrt{c^2x^2}}\sqrt{\frac{c^2x^2}{1+c^4x^4}}\left(\left(c^2x^2\right)^{3/2}\left(11+16c^4x^4+5c^8x^8\right)-12\,(-1)^{3/4}\sqrt{1+c^4x^4}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{c^2x^2}\right],-1\right]+12\,(-1)^{3/4}\sqrt{1+c^4x^4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{c^2x^2}\right],-1\right]\right)$$

Problem 174: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^3}{\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}\,dx$$

Optimal (type 4, 111 leaves, 6 steps):

$$\frac{2}{7\left(c^4+\frac{1}{x^4}\right)\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}+\frac{x^4}{7\,\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}-\frac{2\sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}}\left(c^2+\frac{1}{x^2}\right)\text{EllipticF}\left[2\,\text{ArcCot}[c\,x],\frac{1}{2}\right]}{7\,c\left(c^4+\frac{1}{x^4}\right)^2x^3\,\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}$$

Result (type 4, 119 leaves):

$$\frac{1}{14\sqrt{2}\,c^4\sqrt{c^2x^2}}\sqrt{\frac{c^2x^2}{1+c^4x^4}}\left(\sqrt{c^2x^2}\left(3+4c^4x^4+c^8x^8\right)-4\,(-1)^{1/4}\sqrt{1+c^4x^4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{c^2x^2}\right],-1\right]\right)$$

Problem 176: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x}{\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}\,dx$$

Optimal (type 4, 214 leaves, 8 steps):

$$-\frac{12}{5\left(c^4+\frac{1}{x^4}\right)\left(c^2+\frac{1}{x^2}\right)x^4\,\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}+\frac{6}{5\left(c^4+\frac{1}{x^4}\right)x^2\,\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}+\frac{x^2}{5\,\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}+\frac{12\,c\sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}}\left(c^2+\frac{1}{x^2}\right)\text{EllipticE}\left[2\,\text{ArcCot}[c\,x],\frac{1}{2}\right]}{5\left(c^4+\frac{1}{x^4}\right)^2x^3\,\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}-\frac{6\,c\sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}}\left(c^2+\frac{1}{x^2}\right)\text{EllipticF}\left[2\,\text{ArcCot}[c\,x],\frac{1}{2}\right]}{5\left(c^4+\frac{1}{x^4}\right)^2x^3\,\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}$$

Result (type 4, 171 leaves):

$$\frac{1}{10\,c^2\,(c^2\,x^2)^{3/2}}\sqrt{\frac{c^2\,x^2}{2+2\,c^4\,x^4}}\,\left(\sqrt{c^2\,x^2}\,(-5-4\,c^4\,x^4+c^8\,x^8)-12\,(-1)^{3/4}\,c^2\,x^2\,\sqrt{1+c^4\,x^4}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{c^2\,x^2}\,\right],-1\right]+\right.$$
$$\left.12\,(-1)^{3/4}\,c^2\,x^2\,\sqrt{1+c^4\,x^4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{c^2\,x^2}\,\right],-1\right]\right)$$

Problem 180: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}{x^3}\,dx$$

Optimal (type 4, 92 leaves, 5 steps):

$$\frac{1}{2}\left(c^4+\frac{1}{x^4}\right)x^2\,\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}-\frac{\left(c^4+\frac{1}{x^4}\right)\sqrt{\frac{c^4+\frac{1}{x^4}}{\left(c^2+\frac{1}{x^2}\right)^2}}\,\left(c^2+\frac{1}{x^2}\right)x^3\,\text{EllipticF}\left[2\,\text{ArcCot}[c\,x],\frac{1}{2}\right]\text{Sech}[2\,\text{Log}[c\,x]]^{3/2}}{4\,c}$$

Result (type 4, 98 leaves):

$$\frac{\sqrt{2}\,c^2\,\sqrt{\frac{c^2\,x^2}{1+c^4\,x^4}}\,\left(\sqrt{c^2\,x^2}-(-1)^{1/4}\,\sqrt{1+c^4\,x^4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{c^2\,x^2}\,\right],-1\right]\right)}{\sqrt{c^2\,x^2}}$$

Problem 185: Result more than twice size of optimal antiderivative.

$$\int\text{Sech}[a+b\,\text{Log}[c\,x^n]]^4\,dx$$

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

$$\frac{16\,e^{4\,a}\,x\,(c\,x^n)^{4\,b}\,\text{Hypergeometric2F1}\left[4,\frac{1}{2}\left(4+\frac{1}{b\,n}\right),\frac{1}{2}\left(6+\frac{1}{b\,n}\right),-e^{2\,a}\,(c\,x^n)^{2\,b}\right]}{1+4\,b\,n}$$

Result (type 5, 750 leaves):

$$\frac{1}{6\, b^3\, n^3}\left(-1+4\, b^2\, n^2\right)\, x\, \text{Sech}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]\, \text{Sech}\left[a+b\, n\, \text{Log}[x]+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]\, \text{Sinh}[b\, n\, \text{Log}[x]]+$$
$$\frac{1}{3\, b\, n}x\, \text{Sech}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]\, \text{Sech}\left[a+b\, n\, \text{Log}[x]+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]^3\, \text{Sinh}[b\, n\, \text{Log}[x]]+$$
$$\frac{1}{6\, b^2\, n^2}x\, \text{Sech}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]\, \text{Sech}\left[a+b\, n\, \text{Log}[x]+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]^2$$
$$\left(\text{Cosh}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]+2\, b\, n\, \text{Sinh}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]\right)+$$
$$\frac{1}{6\, b^3\, n^3\, (1+2\, b\, n)}e^{-\frac{a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)}{b\, n}}\, \text{Sech}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]$$
$$\left(e^{\left(2+\frac{1}{b\, n}\right)\, \left(a+b\, \text{Log}\left[c\, x^n\right]\right)}\, \text{Cosh}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]\, \text{Hypergeometric2F1}\left[1,\, 1+\frac{1}{2\, b\, n},\, 2+\frac{1}{2\, b\, n},\, -e^{2\, \left(a+b\, \text{Log}\left[c\, x^n\right]\right)}\right]-\right.$$
$$e^{\frac{a}{b\, n}+\frac{-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]}{n}}\, (1+2\, b\, n)\, x\, \left(\text{Cosh}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]\, \text{Hypergeometric2F1}\left[1,\, \frac{1}{2\, b\, n},\, 1+\frac{1}{2\, b\, n},\, -e^{2\, \left(a+b\, n\, \text{Log}[x]+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right)}\right]+\right.$$
$$\left.\left.\text{Sinh}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]\right)\right)-\frac{1}{3\, b\, n\, (1+2\, b\, n)}2\, e^{-\frac{a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)}{b\, n}}\, \text{Sech}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]$$
$$\left(e^{\left(2+\frac{1}{b\, n}\right)\, \left(a+b\, \text{Log}\left[c\, x^n\right]\right)}\, \text{Cosh}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]\, \text{Hypergeometric2F1}\left[1,\, 1+\frac{1}{2\, b\, n},\, 2+\frac{1}{2\, b\, n},\, -e^{2\, \left(a+b\, \text{Log}\left[c\, x^n\right]\right)}\right]-\right.$$
$$e^{\frac{a}{b\, n}+\frac{-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]}{n}}\, (1+2\, b\, n)\, x\, \left(\text{Cosh}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]\right.$$
$$\left.\left.\text{Hypergeometric2F1}\left[1,\, \frac{1}{2\, b\, n},\, 1+\frac{1}{2\, b\, n},\, -e^{2\, \left(a+b\, n\, \text{Log}[x]+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right)}\right]+\text{Sinh}\left[a+b\, \left(-n\, \text{Log}[x]+\text{Log}\left[c\, x^n\right]\right)\right]\right)\right)$$

Problem 187: Result more than twice size of optimal antiderivative.

$$\int \text{Sech}\left[a+2\, \text{Log}\left[c\, \sqrt{x}\, \right]\right]^3\, dx$$

Optimal (type 1, 25 leaves, 3 steps):

$$\frac{2\, c^6\, e^{-a}}{\left(c^4+\frac{e^{-2\, a}}{x^2}\right)^2}$$

Result (type 1, 62 leaves):

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

Problem 188: Result more than twice size of optimal antiderivative.

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

Optimal (type 1, 25 leaves, 4 steps):

$$\frac{2\,c^2\,e^{-3\,a}}{\left(e^{-2\,a}+\frac{c^4}{x^2}\right)^2}$$

Result (type 1, 64 leaves):

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

Test results for the 220 problems in "6.5.7 (d hyper)^m (a+b (c sech)^n)^p.m"

Problem 5: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 84 leaves):

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

Problem 7: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 54 leaves, 4 steps):

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

Result (type 3, 169 leaves):

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

Problem 13: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 52 leaves, 4 steps):

$$-\frac{(a+b)^2\,\text{ArcTanh}[\text{Cosh}[c+d x]]}{d}+\frac{b\,(2 a+b)\,\text{Sech}[c+d x]}{d}+\frac{b^2\,\text{Sech}[c+d x]^3}{3 d}$$

Result (type 3, 108 leaves):

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

Problem 14: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 50 leaves, 3 steps):

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

Result (type 3, 109 leaves):

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

Problem 16: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 75 leaves, 3 steps):

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

Result (type 3, 151 leaves):

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

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

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

Optimal (type 3, 182 leaves, 6 steps):

$$\frac{3}{8}\,a\,\left(a^2-12\,a\,b+8\,b^2\right)\,x-\frac{3\,a\,\left(a^2-12\,a\,b+8\,b^2\right)\,\text{Tanh}[c+d\,x]}{8\,d}+\frac{b\,\left(6\,a^2-23\,a\,b-8\,b^2\right)\,\text{Tanh}[c+d\,x]^3}{8\,d}-\frac{3\,(5\,a-16\,b)\,b^2\,\text{Tanh}[c+d\,x]^5}{40\,d}-\frac{3\,(a-2\,b)\,\text{Sinh}[c+d\,x]^2\,\text{Tanh}[c+d\,x]\,\left(a+b-b\,\text{Tanh}[c+d\,x]^2\right)^2}{8\,d}+\frac{\text{Cosh}[c+d\,x]\,\text{Sinh}[c+d\,x]^3\,\left(a+b-b\,\text{Tanh}[c+d\,x]^2\right)^3}{4\,d}$$

Result (type 3, 651 leaves):

$$\frac{1}{1280\,d\,\left(a+2\,b+a\,\text{Cosh}\left[2\,(c+d\,x)\right]\right)^3}\left(b+a\,\text{Cosh}[c+d\,x]^2\right)^3\text{Sech}[c]\,\text{Sech}[c+d\,x]^5\Big(1200\,a\,\left(a^2-12\,a\,b+8\,b^2\right)\,d\,x\,\text{Cosh}[d\,x]+1200\,a\,\left(a^2-12\,a\,b+8\,b^2\right)\,d\,x\,\text{Cosh}[2\,c+d\,x]+600\,a^3\,d\,x\,\text{Cosh}[2\,c+3\,d\,x]-7200\,a^2\,b\,d\,x\,\text{Cosh}[2\,c+3\,d\,x]+4800\,a\,b^2\,d\,x\,\text{Cosh}[2\,c+3\,d\,x]+600\,a^3\,d\,x\,\text{Cosh}[4\,c+3\,d\,x]-7200\,a^2\,b\,d\,x\,\text{Cosh}[4\,c+3\,d\,x]+4800\,a\,b^2\,d\,x\,\text{Cosh}[4\,c+3\,d\,x]+120\,a^3\,d\,x\,\text{Cosh}[4\,c+5\,d\,x]-1440\,a^2\,b\,d\,x\,\text{Cosh}[4\,c+5\,d\,x]+960\,a\,b^2\,d\,x\,\text{Cosh}[4\,c+5\,d\,x]+120\,a^3\,d\,x\,\text{Cosh}[6\,c+5\,d\,x]-1440\,a^2\,b\,d\,x\,\text{Cosh}[6\,c+5\,d\,x]+960\,a\,b^2\,d\,x\,\text{Cosh}[6\,c+5\,d\,x]-180\,a^3\,\text{Sinh}[d\,x]+12120\,a^2\,b\,\text{Sinh}[d\,x]-14080\,a\,b^2\,\text{Sinh}[d\,x]+1280\,b^3\,\text{Sinh}[d\,x]-180\,a^3\,\text{Sinh}[2\,c+d\,x]-7080\,a^2\,b\,\text{Sinh}[2\,c+d\,x]+11520\,a\,b^2\,\text{Sinh}[2\,c+d\,x]-310\,a^3\,\text{Sinh}[2\,c+3\,d\,x]+8760\,a^2\,b\,\text{Sinh}[2\,c+3\,d\,x]-8960\,a\,b^2\,\text{Sinh}[2\,c+3\,d\,x]-310\,a^3\,\text{Sinh}[4\,c+3\,d\,x]-840\,a^2\,b\,\text{Sinh}[4\,c+3\,d\,x]+3840\,a\,b^2\,\text{Sinh}[4\,c+3\,d\,x]-640\,b^3\,\text{Sinh}[4\,c+3\,d\,x]-150\,a^3\,\text{Sinh}[4\,c+5\,d\,x]+2520\,a^2\,b\,\text{Sinh}[4\,c+5\,d\,x]-2560\,a\,b^2\,\text{Sinh}[4\,c+5\,d\,x]+128\,b^3\,\text{Sinh}[4\,c+5\,d\,x]-150\,a^3\,\text{Sinh}[6\,c+5\,d\,x]+600\,a^2\,b\,\text{Sinh}[6\,c+5\,d\,x]-15\,a^3\,\text{Sinh}[6\,c+7\,d\,x]+120\,a^2\,b\,\text{Sinh}[6\,c+7\,d\,x]-15\,a^3\,\text{Sinh}[8\,c+7\,d\,x]+120\,a^2\,b\,\text{Sinh}[8\,c+7\,d\,x]+5\,a^3\,\text{Sinh}[8\,c+9\,d\,x]+5\,a^3\,\text{Sinh}[10\,c+9\,d\,x]\Big)$$

Problem 19: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 112 leaves, 6 steps):

$$-\frac{1}{2} a^2 (a-6 b) x+\frac{a^3}{4 d (1-\text{Tanh}[c+d x])}-\frac{3 a^2 b \text{Tanh}[c+d x]}{d}+\frac{b^2 (3 a+b) \text{Tanh}[c+d x]^3}{3 d}-\frac{b^3 \text{Tanh}[c+d x]^5}{5 d}-\frac{a^3}{4 d (1+\text{Tanh}[c+d x])}$$

Result (type 3, 480 leaves):

$$\frac{1}{3840 d} \text{Sech}[c] \text{Sech}[c+d x]^5 \left(-600 a^2 (a-6 b) d x \text{Cosh}[d x]-600 a^2 (a-6 b) d x \text{Cosh}[2 c+d x]-300 a^3 d x \text{Cosh}[2 c+3 d x]+1800 a^2 b d x \text{Cosh}[2 c+3 d x]-300 a^3 d x \text{Cosh}[4 c+3 d x]+1800 a^2 b d x \text{Cosh}[4 c+3 d x]-60 a^3 d x \text{Cosh}[4 c+5 d x]+360 a^2 b d x \text{Cosh}[4 c+5 d x]-60 a^3 d x \text{Cosh}[6 c+5 d x]+360 a^2 b d x \text{Cosh}[6 c+5 d x]+75 a^3 \text{Sinh}[d x]-4320 a^2 b \text{Sinh}[d x]+960 a b^2 \text{Sinh}[d x]-160 b^3 \text{Sinh}[d x]+75 a^3 \text{Sinh}[2 c+d x]+2880 a^2 b \text{Sinh}[2 c+d x]-1440 a b^2 \text{Sinh}[2 c+d x]-480 b^3 \text{Sinh}[2 c+d x]+135 a^3 \text{Sinh}[2 c+3 d x]-2880 a^2 b \text{Sinh}[2 c+3 d x]+480 a b^2 \text{Sinh}[2 c+3 d x]+160 b^3 \text{Sinh}[2 c+3 d x]+135 a^3 \text{Sinh}[4 c+3 d x]+720 a^2 b \text{Sinh}[4 c+3 d x]-720 a b^2 \text{Sinh}[4 c+3 d x]+75 a^3 \text{Sinh}[4 c+5 d x]-720 a^2 b \text{Sinh}[4 c+5 d x]+240 a b^2 \text{Sinh}[4 c+5 d x]+32 b^3 \text{Sinh}[4 c+5 d x]+75 a^3 \text{Sinh}[6 c+5 d x]+15 a^3 \text{Sinh}[6 c+7 d x]+15 a^3 \text{Sinh}[8 c+7 d x]\right)$$

Problem 22: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 70 leaves, 3 steps):

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

Result (type 3, 380 leaves):

$$-\frac{1}{40 d (a+2 b+a \text{Cosh}[2 (c+d x)])^3} \text{Coth}[c+d x] \text{Csch}[c] \text{Sech}[c] \left(a+b \text{Sech}[c+d x]^2\right)^3 \left(10 a \left(5 a^2+12 a b+8 b^2\right) \text{Sinh}[2 c]-10 \left(5 a^3+18 a^2 b+20 a b^2+8 b^3\right) \text{Sinh}[2 d x]-25 a^3 \text{Sinh}[2 (c+d x)]+50 a b^2 \text{Sinh}[2 (c+d x)]+30 b^3 \text{Sinh}[2 (c+d x)]-20 a^3 \text{Sinh}[4 (c+d x)]+40 a b^2 \text{Sinh}[4 (c+d x)]+24 b^3 \text{Sinh}[4 (c+d x)]-5 a^3 \text{Sinh}[6 (c+d x)]+10 a b^2 \text{Sinh}[6 (c+d x)]+6 b^3 \text{Sinh}[6 (c+d x)]-25 a^3 \text{Sinh}[2 (c+2 d x)]-120 a^2 b \text{Sinh}[2 (c+2 d x)]-160 a b^2 \text{Sinh}[2 (c+2 d x)]-64 b^3 \text{Sinh}[2 (c+2 d x)]+25 a^3 \text{Sinh}[4 c+2 d x]+30 a^2 b \text{Sinh}[4 c+2 d x]+5 a^3 \text{Sinh}[6 c+4 d x]-5 a^3 \text{Sinh}[4 c+6 d x]-30 a^2 b \text{Sinh}[4 c+6 d x]-40 a b^2 \text{Sinh}[4 c+6 d x]-16 b^3 \text{Sinh}[4 c+6 d x]\right)$$

Problem 23: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 144 leaves, 5 steps):

$$\frac{(a+b)^2 (a+7b) \text{ArcTanh}[\text{Cosh}[c+dx]]}{2d} - \frac{(a+b)^2 (a+7b) \text{Sech}[c+dx]}{2d} - \frac{b (6a^2+15ab+7b^2) \text{Sech}[c+dx]^3}{6d} - \frac{b^2 (5a+7b) \text{Sech}[c+dx]^5}{10d} - \frac{(a+b) (b+a\text{Cosh}[c+dx]^2)^2 \text{Csch}[c+dx]^2 \text{Sech}[c+dx]^5}{2d}$$

Result (type 3, 409 leaves):

$$-\frac{1}{120 d (a+2b+a\text{Cosh}[2c+2dx])^3} (150a^3+270a^2b-30ab^2-206b^3+225a^3\text{Cosh}[2c+2dx]+585a^2b\text{Cosh}[2c+2dx]+495ab^2\text{Cosh}[2c+2dx]+231b^3\text{Cosh}[2c+2dx]+90a^3\text{Cosh}[4c+4dx]+450a^2b\text{Cosh}[4c+4dx]+750ab^2\text{Cosh}[4c+4dx]+350b^3\text{Cosh}[4c+4dx]+15a^3\text{Cosh}[6c+6dx]+135a^2b\text{Cosh}[6c+6dx]+225ab^2\text{Cosh}[6c+6dx]+105b^3\text{Cosh}[6c+6dx]) \text{Coth}[c+dx] \text{Csch}[c+dx] (a+b\text{Sech}[c+dx]^2)^3 + \frac{4 (a^3+9a^2b+15ab^2+7b^3) \text{Cosh}[c+dx]^6 \text{Log}[\text{Cosh}[\frac{c}{2}+\frac{dx}{2}]] (a+b\text{Sech}[c+dx]^2)^3}{d (a+2b+a\text{Cosh}[2c+2dx])^3} - \frac{4 (a^3+9a^2b+15ab^2+7b^3) \text{Cosh}[c+dx]^6 \text{Log}[\text{Sinh}[\frac{c}{2}+\frac{dx}{2}]] (a+b\text{Sech}[c+dx]^2)^3}{d (a+2b+a\text{Cosh}[2c+2dx])^3}$$

Problem 24: Result more than twice size of optimal antiderivative.

$$\int \text{Csch}[c+dx]^4 (a+b\text{Sech}[c+dx]^2)^3 \, dx$$

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

$$\frac{(a+b)^2 (a+4b) \text{Coth}[c+dx]}{d} - \frac{(a+b)^3 \text{Coth}[c+dx]^3}{3d} + \frac{3b (a+b) (a+2b) \text{Tanh}[c+dx]}{d} - \frac{b^2 (3a+4b) \text{Tanh}[c+dx]^3}{3d} + \frac{b^3 \text{Tanh}[c+dx]^5}{5d}$$

Result (type 3, 213 leaves):

$$-\frac{1}{15 d (a+2b+a\text{Cosh}[2(c+dx)])^3} 8 (b+a\text{Cosh}[c+dx]^2)^3 \text{Sech}[c+dx]^5 (-3b^3\text{Cosh}[c+dx]+\text{Cosh}[c+dx]^3 (-b^2 (15a+14b)+5 (a+b)^3 \text{Coth}[c]^2 \text{Coth}[c+dx]^2) - 3b^3\text{Csch}[c]\text{Sinh}[dx]+\text{Cosh}[c+dx]^4 (-b (45a^2+120ab+73b^2)+5 (a+b)^2 (2a+11b) \text{Coth}[c] \text{Coth}[c+dx]) \text{Csch}[c] \text{Sinh}[dx] - \text{Cosh}[c+dx]^2 (b^2 (15a+14b)+5 (a+b)^3 \text{Coth}[c] \text{Coth}[c+dx]^3) \text{Csch}[c] \text{Sinh}[dx]) \text{Tanh}[c]$$

Problem 25: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sinh}[c+dx]^4}{a+b\text{Sech}[c+dx]^2} \, dx$$

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

$$\frac{\left(3 a^2+12 a b+8 b^2\right) x}{8 a^3}-\frac{\sqrt{b} (a+b)^{3/2} \text{ArcTanh}\left[\frac{\sqrt{b} \text{Tanh}[c+d x]}{\sqrt{a+b}}\right]}{a^3 d}-\frac{(5 a+4 b) \text{Cosh}[c+d x] \text{Sinh}[c+d x]}{8 a^2 d}+\frac{\text{Cosh}[c+d x]^3 \text{Sinh}[c+d x]}{4 a d}$$

Result (type 3, 294 leaves):

$$-\frac{1}{64 a^3 \sqrt{b} \sqrt{a+b} d \left(a+b \text{Sech}[c+d x]^2\right) \sqrt{b (\text{Cosh}[c]-\text{Sinh}[c])^4}} (a+2 b+a \text{Cosh}[2 (c+d x)]) \text{Sech}[c+d x]^2$$
$$\left(\sqrt{b} \left(3 a^3+34 a^2 b+64 a b^2+32 b^3\right) \text{ArcTanh}\left[\frac{\text{Sech}[d x] (\text{Cosh}[2 c]-\text{Sinh}[2 c]) ((a+2 b) \text{Sinh}[d x]-a \text{Sinh}[2 c+d x])}{2 \sqrt{a+b} \sqrt{b (\text{Cosh}[c]-\text{Sinh}[c])^4}}\right]\right.$$
$$(\text{Cosh}[2 c]-\text{Sinh}[2 c])-\sqrt{b (\text{Cosh}[c]-\text{Sinh}[c])^4} \left(a^2 (3 a+2 b) \text{ArcTanh}\left[\frac{\sqrt{b} \text{Tanh}[c+d x]}{\sqrt{a+b}}\right]+\right.$$
$$\left.\left.\sqrt{b} \sqrt{a+b} \left(-2 a^2 c+12 a^2 d x+48 a b d x+32 b^2 d x-8 a (a+b) \text{Sinh}[2 (c+d x)]+a^2 \text{Sinh}[4 (c+d x)]\right)\right)\right)$$

Problem 26: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 372 leaves):

$$\frac{1}{48\,a^{5/2}\sqrt{b}\,d\,\left(b+a\,\text{Cosh}[c+d\,x]^2\right)}\left(a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)]\right)\Bigg(3\,(a^2+8\,a\,b+8\,b^2)\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(\sqrt{a}-i\,\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\Big)\,\text{Sinh}[c]\,\text{Tanh}\Big[\frac{d\,x}{2}\Big]+\text{Cosh}[c]\,\Big(\sqrt{a}-i\,\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\Big[\frac{d\,x}{2}\Big]\Big)\Big)\Big]+3\,(a^2+8\,a\,b+8\,b^2)\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(\sqrt{a}+i\,\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\Big)\,\text{Sinh}[c]\,\text{Tanh}\Big[\frac{d\,x}{2}\Big]+\text{Cosh}[c]\,\Big(\sqrt{a}+i\,\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\Big[\frac{d\,x}{2}\Big]\Big)\Big)\Big]-3\,a^2\left(\text{ArcTan}\Big[\frac{\sqrt{a}-i\,\sqrt{a+b}\,\text{Tanh}\big[\frac{1}{2}(c+d\,x)\big]}{\sqrt{b}}\Big]+\text{ArcTan}\Big[\frac{\sqrt{a}+i\,\sqrt{a+b}\,\text{Tanh}\big[\frac{1}{2}(c+d\,x)\big]}{\sqrt{b}}\Big]\right)-6\,\sqrt{a}\,\sqrt{b}\,(3\,a+4\,b)\,\text{Cosh}[c+d\,x]+2\,a^{3/2}\,\sqrt{b}\,\text{Cosh}[3\,(c+d\,x)]\Bigg)$$

Problem 27: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 75 leaves, 5 steps):

$$-\frac{(a+2\,b)\,x}{2\,a^2}+\frac{\sqrt{b}\,\sqrt{a+b}\,\text{ArcTanh}\Big[\frac{\sqrt{b}\,\text{Tanh}[c+d\,x]}{\sqrt{a+b}}\Big]}{a^2\,d}+\frac{\text{Cosh}[c+d\,x]\,\text{Sinh}[c+d\,x]}{2\,a\,d}$$

Result (type 3, 236 leaves):

$$\frac{1}{16\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)}\left(a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)]\right)\,\text{Sech}[c+d\,x]^2\left(-\frac{\text{ArcTanh}\Big[\frac{\sqrt{b}\,\text{Tanh}[c+d\,x]}{\sqrt{a+b}}\Big]}{\sqrt{b}\,\sqrt{a+b}\,d}+\frac{1}{a^2}\left(-4\,(a+2\,b)\,x+\left((a^2+8\,a\,b+8\,b^2)\,\text{ArcTanh}\Big[\frac{\text{Sech}[d\,x]\,(\text{Cosh}[2\,c]-\text{Sinh}[2\,c])\,((a+2\,b)\,\text{Sinh}[d\,x]-a\,\text{Sinh}[2\,c+d\,x])}{2\,\sqrt{a+b}\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}}\Big]\,(\text{Cosh}[2\,c]-\text{Sinh}[2\,c])\right)\Big/\left(\sqrt{a+b}\,d\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\right)+\frac{2\,a\,\text{Cosh}[2\,d\,x]\,\text{Sinh}[2\,c]}{d}+\frac{2\,a\,\text{Cosh}[2\,c]\,\text{Sinh}[2\,d\,x]}{d}\right)\right)$$

Problem 28: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 328 leaves):

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

Problem 29: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 232 leaves):

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

Problem 30: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 179 leaves):

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

Problem 31: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 338 leaves):

$$-\frac{1}{16\,(a+b)^2\,d\,\left(a+b\,\text{Sech}[c+d x]^2\right)}\left(a+2\,b+a\,\text{Cosh}[2\,(c+d x)]\right)\left(8\,\sqrt{a}\,\sqrt{b}\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-i\,\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d x}{2}\right]+\right.\right.\right.$$
$$\left.\left.\text{Cosh}[c]\left(\sqrt{a}-i\,\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{d x}{2}\right]\right)\right)\right]+8\,\sqrt{a}\,\sqrt{b}\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\right.$$
$$\left.\left(\left(\sqrt{a}+i\,\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d x}{2}\right]+\text{Cosh}[c]\left(\sqrt{a}+i\,\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{d x}{2}\right]\right)\right)\right]+$$
$$(a+b)\,\text{Csch}\left[\frac{1}{2}\,(c+d x)\right]^2-4\,a\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d x)\right]\right]+4\,b\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\,(c+d x)\right]\right]+4\,a\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d x)\right]\right]-$$
$$\left.4\,b\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\,(c+d x)\right]\right]+(a+b)\,\text{Sech}\left[\frac{1}{2}\,(c+d x)\right]^2\right)\text{Sech}[c+d x]^2$$

Problem 32: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 75 leaves, 4 steps):

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

Result (type 3, 216 leaves):

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

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

$$\left.\left.\frac{1}{4}\,\sqrt{a+b}\,\text{Csch}[c]\,\text{Csch}[c+d\,x]^3\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\,(6\,a\,\text{Sinh}[d\,x]-3\,b\,\text{Sinh}[2\,c+d\,x]+(-2\,a+b)\,\text{Sinh}[2\,c+3\,d\,x])\right)\right)\Big/$$

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

Problem 33: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 194 leaves, 7 steps):

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

$$\frac{(5\,a+6\,b)\,\text{Cosh}[c+d\,x]\,\text{Sinh}[c+d\,x]}{8\,a^2\,d\,(a+b-b\,\text{Tanh}[c+d\,x]^2)}+\frac{\text{Cosh}[c+d\,x]^3\,\text{Sinh}[c+d\,x]}{4\,a\,d\,(a+b-b\,\text{Tanh}[c+d\,x]^2)}-\frac{3\,b\,(3\,a+4\,b)\,\text{Tanh}[c+d\,x]}{8\,a^3\,d\,(a+b-b\,\text{Tanh}[c+d\,x]^2)}$$

Result (type 3, 1330 leaves):

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

$$\left(16\,x+\left((a^3-6\,a^2\,b-24\,a\,b^2-16\,b^3)\,\text{ArcTanh}\left[\frac{\text{Sech}[d\,x]\,(\text{Cosh}[2\,c]-\text{Sinh}[2\,c])\,((a+2\,b)\,\text{Sinh}[d\,x]-a\,\text{Sinh}[2\,c+d\,x])}{2\,\sqrt{a+b}\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}}\right]\right.\right.$$

$$\left.(\text{Cosh}[2\,c]-\text{Sinh}[2\,c])\right)\Big/\left(b\,(a+b)^{3/2}\,d\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\right)+$$

$$\left.\left.\frac{(a^2+8\,a\,b+8\,b^2)\,\text{Sech}[2\,c]\,((a+2\,b)\,\text{Sinh}[2\,c]-a\,\text{Sinh}[2\,d\,x])}{b\,(a+b)\,d\,(a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)])}\right)\right)\Big/\left(256\,a^2\,(a+b\,\text{Sech}[c+d\,x]^2)^2\right)+$$

$$\frac{3\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)^2\text{Sech}[c+dx]^4\left(\frac{(a+2b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+dx]}{\sqrt{a+b}}\right]}{8\,b^{3/2}\,(a+b)^{3/2}\,d}-\frac{a\,\text{Sinh}[2\,(c+dx)]}{8\,b\,(a+b)\,d\,(a+2b+a\,\text{Cosh}[2\,(c+dx)])}\right)}{128\left(a+b\,\text{Sech}[c+dx]^2\right)^2}+$$

$$\frac{1}{128\left(a+b\,\text{Sech}[c+dx]^2\right)^2}$$

$$\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)^2\text{Sech}[c+dx]^4$$

$$\left(\frac{1}{a+b}\left(a^5-30\,a^4\,b-480\,a^3\,b^2-1600\,a^2\,b^3-1920\,a\,b^4-768\,b^5\right)\right.$$

$$\left(-\left(\left(i\,\text{ArcTan}\left[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)\right.\right.\right.\right.$$

$$\left.\left.\left.\left(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx]\right)\right]\text{Cosh}[2c]\right)\Big/\left(8\,a^4\,b\sqrt{a+b}\;d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\right)+$$

$$\left(i\,\text{ArcTan}\left[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)\right.\right.$$

$$\left.\left.\left(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx]\right)\right]\text{Sinh}[2c]\right)\Big/\left(8\,a^4\,b\sqrt{a+b}\;d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\right)+$$

$$\frac{1}{8\,a^4\,b\,(a+b)\,d\,(a+2b+a\,\text{Cosh}[2c+2dx])}\text{Sech}[2c]\left(160\,a^4\,b\,d\,x\,\text{Cosh}[2c]+1248\,a^3\,b^2\,d\,x\,\text{Cosh}[2c]+3392\,a^2\,b^3\,d\,x\,\text{Cosh}[2c]+\right.$$

$$3840\,a\,b^4\,d\,x\,\text{Cosh}[2c]+1536\,b^5\,d\,x\,\text{Cosh}[2c]+80\,a^4\,b\,d\,x\,\text{Cosh}[2dx]+464\,a^3\,b^2\,d\,x\,\text{Cosh}[2dx]+768\,a^2\,b^3\,d\,x\,\text{Cosh}[2dx]+$$

$$384\,a\,b^4\,d\,x\,\text{Cosh}[2dx]+80\,a^4\,b\,d\,x\,\text{Cosh}[4c+2dx]+464\,a^3\,b^2\,d\,x\,\text{Cosh}[4c+2dx]+768\,a^2\,b^3\,d\,x\,\text{Cosh}[4c+2dx]+$$

$$384\,a\,b^4\,d\,x\,\text{Cosh}[4c+2dx]+a^5\,\text{Sinh}[2c]+34\,a^4\,b\,\text{Sinh}[2c]+224\,a^3\,b^2\,\text{Sinh}[2c]+576\,a^2\,b^3\,\text{Sinh}[2c]+640\,a\,b^4\,\text{Sinh}[2c]+$$

$$256\,b^5\,\text{Sinh}[2c]-a^5\,\text{Sinh}[2dx]-62\,a^4\,b\,\text{Sinh}[2dx]-318\,a^3\,b^2\,\text{Sinh}[2dx]-512\,a^2\,b^3\,\text{Sinh}[2dx]-256\,a\,b^4\,\text{Sinh}[2dx]-$$

$$30\,a^4\,b\,\text{Sinh}[4c+2dx]-158\,a^3\,b^2\,\text{Sinh}[4c+2dx]-256\,a^2\,b^3\,\text{Sinh}[4c+2dx]-128\,a\,b^4\,\text{Sinh}[4c+2dx]-$$

$$12\,a^4\,b\,\text{Sinh}[2c+4dx]-36\,a^3\,b^2\,\text{Sinh}[2c+4dx]-24\,a^2\,b^3\,\text{Sinh}[2c+4dx]-12\,a^4\,b\,\text{Sinh}[6c+4dx]-36\,a^3\,b^2\,\text{Sinh}[6c+4dx]-$$

$$\left.\left.24\,a^2\,b^3\,\text{Sinh}[6c+4dx]+2\,a^4\,b\,\text{Sinh}[4c+6dx]+2\,a^3\,b^2\,\text{Sinh}[4c+6dx]+2\,a^4\,b\,\text{Sinh}[8c+6dx]+2\,a^3\,b^2\,\text{Sinh}[8c+6dx]\right)\right)$$

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

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

Optimal (type 3, 114 leaves, 5 steps):

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

Result (type 3, 861 leaves) :

$$\frac{1}{1536\,a^{7/2}\,d\,\left(a+b\,\text{Sech}[c+d x]^2\right)^2}\left(a+2b+a\,\text{Cosh}[2(c+d x)]\right)^2\text{Sech}[c+d x]^4$$

$$\left(\frac{9a^3\,\text{ArcTan}\left[\frac{\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d x}{2}\right]+\text{Cosh}[c]\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{d x}{2}\right]\right)}{\sqrt{b}}\right]}{b^{3/2}}+\right.$$

$$576\,a\sqrt{b}\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d x}{2}\right]+\right.\right.$$

$$\left.\left.\text{Cosh}[c]\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{d x}{2}\right]\right)\right)\right]+960\,b^{3/2}\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\right.$$

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

$$\frac{9a^3\,\text{ArcTan}\left[\frac{\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d x}{2}\right]+\text{Cosh}[c]\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{d x}{2}\right]\right)}{\sqrt{b}}\right]}{b^{3/2}}+$$

$$576\,a\sqrt{b}\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d x}{2}\right]+\right.\right.$$

$$\left.\left.\text{Cosh}[c]\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{d x}{2}\right]\right)\right)\right]+960\,b^{3/2}\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\right.$$

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

$$\frac{9a^3\,\text{ArcTan}\left[\frac{\sqrt{a}-i\sqrt{a+b}\,\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{b}}\right]}{b^{3/2}}-\frac{9a^3\,\text{ArcTan}\left[\frac{\sqrt{a}+i\sqrt{a+b}\,\text{Tanh}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{b}}\right]}{b^{3/2}}-96\sqrt{a}\,(3a+8b)\,\text{Cosh}[c]\,\text{Cosh}[d x]+$$

$$32a^{3/2}\,\text{Cosh}[3c]\,\text{Cosh}[3d x]-\frac{384a^{3/2}\,b\,\text{Cosh}[c+d x]}{a+2b+a\,\text{Cosh}[2(c+d x)]}-\frac{384\sqrt{a}\,b^2\,\text{Cosh}[c+d x]}{a+2b+a\,\text{Cosh}[2(c+d x)]}-$$

$$\left.288a^{3/2}\,\text{Sinh}[c]\,\text{Sinh}[d x]-768\sqrt{a}\,b\,\text{Sinh}[c]\,\text{Sinh}[d x]+32a^{3/2}\,\text{Sinh}[3c]\,\text{Sinh}[3d x]\right)$$

Problem 35: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 131 leaves, 6 steps):

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

Result (type 3, 791 leaves):

$$\left(\left(a+2b+a\,\mathrm{Cosh}[2c+2dx]\right)^2\,\mathrm{Sech}[c+dx]^4\right.$$

$$\left(16x+\left(\left(a^3-6a^2b-24ab^2-16b^3\right)\,\mathrm{ArcTanh}\left[\frac{\mathrm{Sech}[dx]\,\left(\mathrm{Cosh}[2c]-\mathrm{Sinh}[2c]\right)\,\left((a+2b)\,\mathrm{Sinh}[dx]-a\,\mathrm{Sinh}[2c+dx]\right)}{2\sqrt{a+b}\,\sqrt{b\,\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^4}}\right]\right.\right.$$

$$\left.\left(\mathrm{Cosh}[2c]-\mathrm{Sinh}[2c]\right)\right)\Big/\left(b\,(a+b)^{3/2}\,d\,\sqrt{b\,\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^4}\right)+$$

$$\left.\left.\frac{\left(a^2+8ab+8b^2\right)\,\mathrm{Sech}[2c]\,\left((a+2b)\,\mathrm{Sinh}[2c]-a\,\mathrm{Sinh}[2dx]\right)}{b\,(a+b)\,d\,\left(a+2b+a\,\mathrm{Cosh}[2\,(c+dx)]\right)}\right)\right)\Big/\left(128a^2\,\left(a+b\,\mathrm{Sech}[c+dx]^2\right)^2\right)+$$

$$\left(\left(a+2b+a\,\mathrm{Cosh}[2c+2dx]\right)^2\,\mathrm{Sech}[c+dx]^4\,\left(-64\,(a+2b)\,x+\left(\left(-a^4+16a^3b+144a^2b^2+256ab^3+128b^4\right)\right.\right.\right.$$

$$\left.\mathrm{ArcTanh}\left[\frac{\mathrm{Sech}[dx]\,\left(\mathrm{Cosh}[2c]-\mathrm{Sinh}[2c]\right)\,\left((a+2b)\,\mathrm{Sinh}[dx]-a\,\mathrm{Sinh}[2c+dx]\right)}{2\sqrt{a+b}\,\sqrt{b\,\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^4}}\right]\,\left(\mathrm{Cosh}[2c]-\mathrm{Sinh}[2c]\right)\right)\Big/$$

$$\left(b\,(a+b)^{3/2}\,d\,\sqrt{b\,\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^4}\right)+\frac{16a\,\mathrm{Cosh}[2dx]\,\mathrm{Sinh}[2c]}{d}+\frac{16a\,\mathrm{Cosh}[2c]\,\mathrm{Sinh}[2dx]}{d}-$$

$$\left.\left.\frac{\left(a^3+18a^2b+48ab^2+32b^3\right)\,\mathrm{Sech}[2c]\,\left((a+2b)\,\mathrm{Sinh}[2c]-a\,\mathrm{Sinh}[2dx]\right)}{b\,(a+b)\,d\,\left(a+2b+a\,\mathrm{Cosh}[2\,(c+dx)]\right)}\right)\right)\Big/\left(256a^3\,\left(a+b\,\mathrm{Sech}[c+dx]^2\right)^2\right)-$$

$$\frac{\left(a+2b+a\,\mathrm{Cosh}[2c+2dx]\right)^2\,\mathrm{Sech}[c+dx]^4\,\left(-\frac{a\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\mathrm{Tanh}[c+dx]}{\sqrt{a+b}}\right]}{(a+b)^{3/2}}+\frac{\sqrt{b}\,(a+2b)\,\mathrm{Sinh}[2\,(c+dx)]}{(a+b)\,\left(a+2b+a\,\mathrm{Cosh}[2\,(c+dx)]\right)}\right)}{256\,b^{3/2}\,d\,\left(a+b\,\mathrm{Sech}[c+dx]^2\right)^2}+$$

$$\frac{\left(a+2b+a\,\mathrm{Cosh}[2c+2dx]\right)^2\,\mathrm{Sech}[c+dx]^4\,\left(-\frac{(a+2b)\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\mathrm{Tanh}[c+dx]}{\sqrt{a+b}}\right]}{8\,b^{3/2}\,(a+b)^{3/2}\,d}+\frac{a\,\mathrm{Sinh}[2\,(c+dx)]}{8b\,(a+b)\,d\,\left(a+2b+a\,\mathrm{Cosh}[2\,(c+dx)]\right)}\right)}{16\,\left(a+b\,\mathrm{Sech}[c+dx]^2\right)^2}$$

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

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

Optimal (type 3, 84 leaves, 4 steps):

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

Result (type 3, 479 leaves):

$$\frac{1}{128\,d\,\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^2}\left(a+2\,b+a\,\mathrm{Cosh}\left[2\,(c+d\,x)\right]\right)^2\,\mathrm{Sech}[c+d\,x]^4\left(\frac{32\,\mathrm{Cosh}[c]\,\mathrm{Cosh}[d\,x]}{a^2}+\frac{32\,b\,\mathrm{Cosh}[c+d\,x]}{a^2\,\left(a+2\,b+a\,\mathrm{Cosh}\left[2\,(c+d\,x)\right]\right)}+\frac{1}{a^{5/2}\,b^{3/2}}2\left(-\left(a^2+24\,b^2\right)\mathrm{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-i\sqrt{a+b}\sqrt{\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^2}\right)\mathrm{Sinh}[c]\,\mathrm{Tanh}\left[\frac{d\,x}{2}\right]+\mathrm{Cosh}[c]\left(\sqrt{a}-i\sqrt{a+b}\sqrt{\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^2}\,\mathrm{Tanh}\left[\frac{d\,x}{2}\right]\right)\right)\right]-a^2\,\mathrm{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}+i\sqrt{a+b}\sqrt{\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^2}\right)\mathrm{Sinh}[c]\,\mathrm{Tanh}\left[\frac{d\,x}{2}\right]+\mathrm{Cosh}[c]\left(\sqrt{a}+i\sqrt{a+b}\sqrt{\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^2}\,\mathrm{Tanh}\left[\frac{d\,x}{2}\right]\right)\right)\right]-24\,b^2\,\mathrm{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}+i\sqrt{a+b}\sqrt{\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^2}\right)\mathrm{Sinh}[c]\,\mathrm{Tanh}\left[\frac{d\,x}{2}\right]+\mathrm{Cosh}[c]\left(\sqrt{a}+i\sqrt{a+b}\sqrt{\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^2}\,\mathrm{Tanh}\left[\frac{d\,x}{2}\right]\right)\right)\right]+a^2\,\mathrm{ArcTan}\left[\frac{\sqrt{a}-i\sqrt{a+b}\,\mathrm{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{b}}\right]+a^2\,\mathrm{ArcTan}\left[\frac{\sqrt{a}+i\sqrt{a+b}\,\mathrm{Tanh}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{b}}\right]+16\sqrt{a}\,b^{3/2}\,\mathrm{Sinh}[c]\,\mathrm{Sinh}[d\,x]\right)\right)$$

Problem 37: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 99 leaves, 5 steps):

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

Result (type 3, 377 leaves):

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

Problem 38: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 92 leaves, 4 steps):

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

Result (type 3, 220 leaves):

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

Problem 39: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 147 leaves, 6 steps):

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

Result (type 3, 462 leaves):

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

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

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

Optimal (type 3, 123 leaves, 5 steps):

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

Result (type 3, 620 leaves):

$$-\frac{(a+2b+a\,\text{Cosh}[2c+2dx])^2\,\text{Coth}[c]\,\text{Csch}[c+dx]^2\,\text{Sech}[c+dx]^4}{12\,(a+b)^2\,d\,\left(a+b\,\text{Sech}[c+dx]^2\right)^2}+\Bigg((3a-2b)\,(a+2b+a\,\text{Cosh}[2c+2dx])^2$$

$$\text{Sech}[c+dx]^4\,\Bigg(\Bigg(\text{i}\,b\,\text{ArcTan}\Big[\text{Sech}[dx]\,\Big(-\frac{\text{i}\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{\text{i}\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\Big)$$

$$(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx])\Big]\,\text{Cosh}[2c]\Bigg)\Big/\left(8\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)-$$

$$\Bigg(\text{i}\,b\,\text{ArcTan}\Big[\text{Sech}[dx]\,\Big(-\frac{\text{i}\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{\text{i}\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\Big)$$

$$(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx])\Big]\,\text{Sinh}[2c]\Bigg)\Big/\left(8\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\Bigg)\Bigg)\Big/$$

$$\left((a+b)^3\,\left(a+b\,\text{Sech}[c+dx]^2\right)^2\right)+\frac{(a+2b+a\,\text{Cosh}[2c+2dx])^2\,\text{Csch}[c]\,\text{Csch}[c+dx]^3\,\text{Sech}[c+dx]^4\,\text{Sinh}[dx]}{12\,(a+b)^2\,d\,\left(a+b\,\text{Sech}[c+dx]^2\right)^2}+$$

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

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

Problem 41: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 242 leaves, 8 steps):

$$\frac{3\,(a^2+12ab+16b^2)\,x}{8a^5}-\frac{3\sqrt{b}\,(5a^2+20ab+16b^2)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+dx]}{\sqrt{a+b}}\right]}{8a^5\sqrt{a+b}\,d}-\frac{(5a+8b)\,\text{Cosh}[c+dx]\,\text{Sinh}[c+dx]}{8a^2\,d\,\left(a+b-b\,\text{Tanh}[c+dx]^2\right)^2}+$$

$$\frac{\text{Cosh}[c+dx]^3\,\text{Sinh}[c+dx]}{4ad\,\left(a+b-b\,\text{Tanh}[c+dx]^2\right)^2}-\frac{b\,(7a+12b)\,\text{Tanh}[c+dx]}{8a^3\,d\,\left(a+b-b\,\text{Tanh}[c+dx]^2\right)^2}-\frac{3b\,(a+2b)\,\text{Tanh}[c+dx]}{2a^4\,d\,\left(a+b-b\,\text{Tanh}[c+dx]^2\right)}$$

Result (type 3, 4019 leaves):

$$\Big(3\,(a+2b+a\,\text{Cosh}[2c+2dx])^3\,\text{Sech}[c+dx]^6$$

$$\left(\frac{\left(3 a^2+8 a b+8 b^2\right) \text{ArcTanh}\left[\frac{\sqrt{b} \text{ Tanh}[c+d x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\frac{a \sqrt{b} \left(3 a^2+16 a b+16 b^2+3 a (a+2 b) \text{Cosh}[2 (c+d x)]\right) \text{Sinh}[2 (c+d x)]}{(a+b)^2 \left(a+2 b+a \text{Cosh}[2 (c+d x)]\right)^2}\right)\Bigg/$$

$$\left(16384 b^{5/2} d \left(a+b \text{Sech}[c+d x]^2\right)^3\right)+\Bigg((a+2 b+a \text{Cosh}[2 c+2 d x])^3 \text{Sech}[c+d x]^6$$

$$\left(-\frac{3 a (a+2 b) \text{ArcTanh}\left[\frac{\sqrt{b} \text{ Tanh}[c+d x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}+\frac{\sqrt{b} \left(3 a^3+14 a^2 b+24 a b^2+16 b^3+a \left(3 a^2+4 a b+4 b^2\right) \text{Cosh}[2 (c+d x)]\right) \text{Sinh}[2 (c+d x)]}{(a+b)^2 \left(a+2 b+a \text{Cosh}[2 (c+d x)]\right)^2}\right)\Bigg)\Bigg/$$

$$\left(16384 b^{5/2} d \left(a+b \text{Sech}[c+d x]^2\right)^3\right)-\frac{1}{512 \left(a+b \text{Sech}[c+d x]^2\right)^3}$$

$$3 (a+2 b+a \text{Cosh}[2 c+2 d x])^3 \text{Sech}[c+d x]^6 \left(\frac{1}{(a+b)^2}\left(3 a^5-10 a^4 b+80 a^3 b^2+480 a^2 b^3+640 a b^4+256 b^5\right)\right.$$

$$\left(\left(\text{i} \text{ ArcTan}\left[\text{Sech}[d x] \left(-\frac{\text{i} \text{ Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}+\frac{\text{i} \text{ Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}\right)\right.\right.\right.$$

$$\left.\left.(-a \text{Sinh}[d x]-2 b \text{Sinh}[d x]+a \text{Sinh}[2 c+d x])\right] \text{Cosh}[2 c]\right)\Bigg/\left(64 a^3 b^2 \sqrt{a+b} d \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}\right)-$$

$$\left(\text{i} \text{ ArcTan}\left[\text{Sech}[d x] \left(-\frac{\text{i} \text{ Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}+\frac{\text{i} \text{ Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}\right)\right.\right.$$

$$\left.\left.\left.(-a \text{Sinh}[d x]-2 b \text{Sinh}[d x]+a \text{Sinh}[2 c+d x])\right] \text{Sinh}[2 c]\right)\Bigg/\left(64 a^3 b^2 \sqrt{a+b} d \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}\right)\right)+$$

$$\frac{1}{128 a^3 b^2 (a+b)^2 d (a+2 b+a \text{Cosh}[2 c+2 d x])^2} \text{Sech}[2 c] \left(768 a^4 b^2 d x \text{Cosh}[2 c]+3584 a^3 b^3 d x \text{Cosh}[2 c]+6912 a^2 b^4 d x \text{Cosh}[2 c]+\right.$$
$$6144 a b^5 d x \text{Cosh}[2 c]+2048 b^6 d x \text{Cosh}[2 c]+512 a^4 b^2 d x \text{Cosh}[2 d x]+2048 a^3 b^3 d x \text{Cosh}[2 d x]+2560 a^2 b^4 d x \text{Cosh}[2 d x]+$$
$$1024 a b^5 d x \text{Cosh}[2 d x]+512 a^4 b^2 d x \text{Cosh}[4 c+2 d x]+2048 a^3 b^3 d x \text{Cosh}[4 c+2 d x]+2560 a^2 b^4 d x \text{Cosh}[4 c+2 d x]+$$
$$1024 a b^5 d x \text{Cosh}[4 c+2 d x]+128 a^4 b^2 d x \text{Cosh}[2 c+4 d x]+256 a^3 b^3 d x \text{Cosh}[2 c+4 d x]+128 a^2 b^4 d x \text{Cosh}[2 c+4 d x]+$$
$$128 a^4 b^2 d x \text{Cosh}[6 c+4 d x]+256 a^3 b^3 d x \text{Cosh}[6 c+4 d x]+128 a^2 b^4 d x \text{Cosh}[6 c+4 d x]-9 a^6 \text{Sinh}[2 c]+12 a^5 b \text{Sinh}[2 c]+$$
$$684 a^4 b^2 \text{Sinh}[2 c]+2880 a^3 b^3 \text{Sinh}[2 c]+5280 a^2 b^4 \text{Sinh}[2 c]+4608 a b^5 \text{Sinh}[2 c]+1536 b^6 \text{Sinh}[2 c]+9 a^6 \text{Sinh}[2 d x]-$$
$$14 a^5 b \text{Sinh}[2 d x]-608 a^4 b^2 \text{Sinh}[2 d x]-2112 a^3 b^3 \text{Sinh}[2 d x]-2560 a^2 b^4 \text{Sinh}[2 d x]-1024 a b^5 \text{Sinh}[2 d x]-3 a^6 \text{Sinh}[4 c+2 d x]+$$
$$10 a^5 b \text{Sinh}[4 c+2 d x]+304 a^4 b^2 \text{Sinh}[4 c+2 d x]+1056 a^3 b^3 \text{Sinh}[4 c+2 d x]+1280 a^2 b^4 \text{Sinh}[4 c+2 d x]+512 a b^5 \text{Sinh}[4 c+2 d x]+$$
$$\left.3 a^6 \text{Sinh}[2 c+4 d x]-12 a^5 b \text{Sinh}[2 c+4 d x]-204 a^4 b^2 \text{Sinh}[2 c+4 d x]-384 a^3 b^3 \text{Sinh}[2 c+4 d x]-192 a^2 b^4 \text{Sinh}[2 c+4 d x]\right)\Bigg)+$$

$$\frac{1}{512 \left(a+b \text{Sech}[c+d x]^2\right)^3} (a+2 b+a \text{Cosh}[2 c+2 d x])^3 \text{Sech}[c+d x]^6 \left(\frac{12 \left(7 a^2+32 a b+32 b^2\right) x}{a^5}+\right.$$

$$\frac{1}{(a+b)^2}\left(a^7-14\,a^6\,b+336\,a^5\,b^2+5600\,a^4\,b^3+22\,400\,a^3\,b^4+37\,632\,a^2\,b^5+28\,672\,a\,b^6+8192\,b^7\right)$$

$$\left(\left(3\,\mathrm{i}\,\mathrm{ArcTan}\left[\mathrm{Sech}[d\,x]\left(-\frac{\mathrm{i}\,\mathrm{Cosh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}+\frac{\mathrm{i}\,\mathrm{Sinh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}\right)\right.\right.\right.$$

$$\left.\left.\left(-a\,\mathrm{Sinh}[d\,x]-2\,b\,\mathrm{Sinh}[d\,x]+a\,\mathrm{Sinh}[2\,c+d\,x]\right)\right]\mathrm{Cosh}[2\,c]\right)\Big/\left(64\,a^5\,b^2\sqrt{a+b}\;d\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}\right)-$$

$$\left(3\,\mathrm{i}\,\mathrm{ArcTan}\left[\mathrm{Sech}[d\,x]\left(-\frac{\mathrm{i}\,\mathrm{Cosh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}+\frac{\mathrm{i}\,\mathrm{Sinh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}\right)\right.\right.$$

$$\left.\left.\left.\left(-a\,\mathrm{Sinh}[d\,x]-2\,b\,\mathrm{Sinh}[d\,x]+a\,\mathrm{Sinh}[2\,c+d\,x]\right)\right]\mathrm{Sinh}[2\,c]\right)\Big/\left(64\,a^5\,b^2\sqrt{a+b}\;d\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}\right)\right)+$$

$$\frac{1}{16\,a^5\,b\,(a+b)\,d\,\left(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]\right)^2}\mathrm{Sech}[2\,c]\left(-a^6\,\mathrm{Sinh}[2\,c]-52\,a^5\,b\,\mathrm{Sinh}[2\,c]-500\,a^4\,b^2\,\mathrm{Sinh}[2\,c]-\right.$$

$$1920\,a^3\,b^3\,\mathrm{Sinh}[2\,c]-3520\,a^2\,b^4\,\mathrm{Sinh}[2\,c]-3072\,a\,b^5\,\mathrm{Sinh}[2\,c]-1024\,b^6\,\mathrm{Sinh}[2\,c]+a^6\,\mathrm{Sinh}[2\,d\,x]+$$

$$\left.50\,a^5\,b\,\mathrm{Sinh}[2\,d\,x]+400\,a^4\,b^2\,\mathrm{Sinh}[2\,d\,x]+1120\,a^3\,b^3\,\mathrm{Sinh}[2\,d\,x]+1280\,a^2\,b^4\,\mathrm{Sinh}[2\,d\,x]+512\,a\,b^5\,\mathrm{Sinh}[2\,d\,x]\right)+$$

$$\frac{1}{64\,a^5\,b^2\,(a+b)^2\,d\,\left(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]\right)}\mathrm{Sech}[2\,c]\left(-3\,a^7\,\mathrm{Sinh}[2\,c]+42\,a^6\,b\,\mathrm{Sinh}[2\,c]+2192\,a^5\,b^2\,\mathrm{Sinh}[2\,c]+16\,480\,a^4\,b^3\,\mathrm{Sinh}[2\,c]+\right.$$

$$51\,200\,a^3\,b^4\,\mathrm{Sinh}[2\,c]+77\,824\,a^2\,b^5\,\mathrm{Sinh}[2\,c]+57\,344\,a\,b^6\,\mathrm{Sinh}[2\,c]+16\,384\,b^7\,\mathrm{Sinh}[2\,c]+3\,a^7\,\mathrm{Sinh}[2\,d\,x]-44\,a^6\,b\,\mathrm{Sinh}[2\,d\,x]-$$

$$\left.1900\,a^5\,b^2\,\mathrm{Sinh}[2\,d\,x]-10\,880\,a^4\,b^3\,\mathrm{Sinh}[2\,d\,x]-23\,360\,a^3\,b^4\,\mathrm{Sinh}[2\,d\,x]-21\,504\,a^2\,b^5\,\mathrm{Sinh}[2\,d\,x]-7168\,a\,b^6\,\mathrm{Sinh}[2\,d\,x]\right)+$$

$$(a+2\,b)\left(-\frac{12\,\mathrm{Cosh}[2\,c+2\,d\,x]}{a^4\,d}-\frac{12\,\mathrm{Sinh}[2\,c+2\,d\,x]}{a^4\,d}\right)+(a+2\,b)\left(\frac{12\,\mathrm{Cosh}[2\,c+2\,d\,x]}{a^4\,d}-\frac{12\,\mathrm{Sinh}[2\,c+2\,d\,x]}{a^4\,d}\right)+$$

$$\left.\frac{2\,\mathrm{Sinh}[4\,c+4\,d\,x]}{a^3\,d}\right)+$$

$$\frac{1}{256\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^3}\left(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]\right)^3$$

$$\mathrm{Sech}[c+d\,x]^6$$

$$\left(\frac{1}{(a+b)^2}\left(a^6-8\,a^5\,b+120\,a^4\,b^2+1280\,a^3\,b^3+3200\,a^2\,b^4+3072\,a\,b^5+1024\,b^6\right)\right.$$

$$\left(-\left(\left(3\,\mathrm{i}\,\mathrm{ArcTan}\left[\mathrm{Sech}[d\,x]\left(-\frac{\mathrm{i}\,\mathrm{Cosh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}+\frac{\mathrm{i}\,\mathrm{Sinh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}\right)\right.\right.\right.$$

$$\left.\left.\left(-a\,\mathrm{Sinh}[d\,x]-2\,b\,\mathrm{Sinh}[d\,x]+a\,\mathrm{Sinh}[2\,c+d\,x]\right)\right]\mathrm{Cosh}[2\,c]\right)\Big/\left(64\,a^4\,b^2\sqrt{a+b}\;d\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}\right)\right)+$$

$$\left(3\,\mathrm{i}\,\mathrm{ArcTan}\left[\mathrm{Sech}[d\,x]\left(-\frac{\mathrm{i}\,\mathrm{Cosh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}+\frac{\mathrm{i}\,\mathrm{Sinh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}\right)\right.\right.$$

$$\left(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x]\right)\Big]\,\text{Sinh}[2\,c]\Bigg)\Bigg/\left(64\,a^4\,b^2\,\sqrt{a+b}\,\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)\Bigg)+$$

$$\frac{1}{128\,a^4\,b^2\,(a+b)^2\,d\,\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^2}\,\text{Sech}[2\,c]\,\Big(-4608\,a^5\,b^2\,d\,x\,\text{Cosh}[2\,c]-30\,720\,a^4\,b^3\,d\,x\,\text{Cosh}[2\,c]-$$

$$84\,480\,a^3\,b^4\,d\,x\,\text{Cosh}[2\,c]-119\,808\,a^2\,b^5\,d\,x\,\text{Cosh}[2\,c]-86\,016\,a\,b^6\,d\,x\,\text{Cosh}[2\,c]-24\,576\,b^7\,d\,x\,\text{Cosh}[2\,c]-3072\,a^5\,b^2\,d\,x\,\text{Cosh}[2\,d\,x]-$$

$$18\,432\,a^4\,b^3\,d\,x\,\text{Cosh}[2\,d\,x]-39\,936\,a^3\,b^4\,d\,x\,\text{Cosh}[2\,d\,x]-36\,864\,a^2\,b^5\,d\,x\,\text{Cosh}[2\,d\,x]-12\,288\,a\,b^6\,d\,x\,\text{Cosh}[2\,d\,x]-$$

$$3072\,a^5\,b^2\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]-18\,432\,a^4\,b^3\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]-39\,936\,a^3\,b^4\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]-36\,864\,a^2\,b^5\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]-$$

$$12\,288\,a\,b^6\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]-768\,a^5\,b^2\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]-3072\,a^4\,b^3\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]-3840\,a^3\,b^4\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]-$$

$$1536\,a^2\,b^5\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]-768\,a^5\,b^2\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]-3072\,a^4\,b^3\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]-3840\,a^3\,b^4\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]-$$

$$1536\,a^2\,b^5\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+9\,a^7\,\text{Sinh}[2\,c]-54\,a^6\,b\,\text{Sinh}[2\,c]-2392\,a^5\,b^2\,\text{Sinh}[2\,c]-13\,968\,a^4\,b^3\,\text{Sinh}[2\,c]-$$

$$36\,480\,a^3\,b^4\,\text{Sinh}[2\,c]-50\,432\,a^2\,b^5\,\text{Sinh}[2\,c]-35\,840\,a\,b^6\,\text{Sinh}[2\,c]-10\,240\,b^7\,\text{Sinh}[2\,c]-9\,a^7\,\text{Sinh}[2\,d\,x]+56\,a^6\,b\,\text{Sinh}[2\,d\,x]+$$

$$2552\,a^5\,b^2\,\text{Sinh}[2\,d\,x]+13\,184\,a^4\,b^3\,\text{Sinh}[2\,d\,x]+27\,072\,a^3\,b^4\,\text{Sinh}[2\,d\,x]+24\,576\,a^2\,b^5\,\text{Sinh}[2\,d\,x]+8192\,a\,b^6\,\text{Sinh}[2\,d\,x]+$$

$$3\,a^7\,\text{Sinh}[4\,c+2\,d\,x]-24\,a^6\,b\,\text{Sinh}[4\,c+2\,d\,x]-600\,a^5\,b^2\,\text{Sinh}[4\,c+2\,d\,x]-3200\,a^4\,b^3\,\text{Sinh}[4\,c+2\,d\,x]-6720\,a^3\,b^4\,\text{Sinh}[4\,c+2\,d\,x]-$$

$$6144\,a^2\,b^5\,\text{Sinh}[4\,c+2\,d\,x]-2048\,a\,b^6\,\text{Sinh}[4\,c+2\,d\,x]-3\,a^7\,\text{Sinh}[2\,c+4\,d\,x]+26\,a^6\,b\,\text{Sinh}[2\,c+4\,d\,x]+992\,a^5\,b^2\,\text{Sinh}[2\,c+4\,d\,x]+$$

$$3648\,a^4\,b^3\,\text{Sinh}[2\,c+4\,d\,x]+4480\,a^3\,b^4\,\text{Sinh}[2\,c+4\,d\,x]+1792\,a^2\,b^5\,\text{Sinh}[2\,c+4\,d\,x]+256\,a^5\,b^2\,\text{Sinh}[6\,c+4\,d\,x]+$$

$$1024\,a^4\,b^3\,\text{Sinh}[6\,c+4\,d\,x]+1280\,a^3\,b^4\,\text{Sinh}[6\,c+4\,d\,x]+512\,a^2\,b^5\,\text{Sinh}[6\,c+4\,d\,x]+64\,a^5\,b^2\,\text{Sinh}[4\,c+6\,d\,x]+$$

$$128\,a^4\,b^3\,\text{Sinh}[4\,c+6\,d\,x]+64\,a^3\,b^4\,\text{Sinh}[4\,c+6\,d\,x]+64\,a^5\,b^2\,\text{Sinh}[8\,c+6\,d\,x]+128\,a^4\,b^3\,\text{Sinh}[8\,c+6\,d\,x]+64\,a^3\,b^4\,\text{Sinh}[8\,c+6\,d\,x]\Big)\Bigg)-$$

$$\frac{1}{8192\,b^2\,(a+b)^2\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3}\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^3$$

$$\text{Sech}[c+d\,x]^6$$

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

$$\Big(a\,\text{Sech}[2\,c]\,\Big(\left(-9\,a^4-16\,a^3\,b+48\,a^2\,b^2+128\,a\,b^3+64\,b^4\right)\text{Sinh}[2\,d\,x]+$$

$$a\left(-3\,a^3+2\,a^2\,b+24\,a\,b^2+16\,b^3\right)\text{Sinh}\big[2\,(c+2\,d\,x)\big]+\left(3\,a^4-64\,a^2\,b^2-128\,a\,b^3-64\,b^4\right)\text{Sinh}[4\,c+2\,d\,x]\Big)+$$

$$\left.\left(9\,a^5+18\,a^4\,b-64\,a^3\,b^2-256\,a^2\,b^3-320\,a\,b^4-128\,b^5\right)\text{Tanh}[2\,c]\Big)\Big/\left(a^2\,\left(a+2\,b+a\,\text{Cosh}\big[2\,(c+d\,x)\big]\right)^2\right)\right)$$

Problem 42: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 154 leaves, 6 steps):

$$\frac{5\sqrt{b}\,(3a+7b)\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Cosh}[c+dx]}{\sqrt{b}}\right]}{8a^{9/2}d}-\frac{(a+3b)\,\mathrm{Cosh}[c+dx]}{a^4 d}+\frac{\mathrm{Cosh}[c+dx]^3}{3a^3 d}+\frac{b^2(a+b)\,\mathrm{Cosh}[c+dx]}{4a^4 d\,(b+a\,\mathrm{Cosh}[c+dx]^2)^2}-\frac{b\,(9a+13b)\,\mathrm{Cosh}[c+dx]}{8a^4 d\,(b+a\,\mathrm{Cosh}[c+dx]^2)}$$

Result (type 3, 1364 leaves):

$$-\left(\left(3\left(\frac{3\left(\mathrm{ArcTan}\left[\frac{\sqrt{a}-i\sqrt{a+b}\,\mathrm{Tanh}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{b}}\right]+\mathrm{ArcTan}\left[\frac{\sqrt{a}+i\sqrt{a+b}\,\mathrm{Tanh}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{b}}\right]\right)}{\sqrt{a}}+\frac{2\sqrt{b}\,\mathrm{Cosh}[c+dx]\,(3a+10b+3a\,\mathrm{Cosh}[2(c+dx)])}{(a+2b+a\,\mathrm{Cosh}[2(c+dx)])^2}\right)\right.\right.$$

$$\left.\left.(a+2b+a\,\mathrm{Cosh}[2c+2dx])^3\,\mathrm{Sech}[c+dx]^6\right)\Big/\left(8192\,b^{5/2}d\,(a+b\,\mathrm{Sech}[c+dx]^2)^3\right)\right)-$$

$$\frac{1}{2048\,a^{3/2}b^{5/2}d\,(a+b\,\mathrm{Sech}[c+dx]^2)^3}\left(-(3a-4b)\left(\mathrm{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^2}\right)\mathrm{Sinh}[c]\,\mathrm{Tanh}\left[\frac{dx}{2}\right]+\right.\right.\right.\right.$$

$$\left.\left.\left.\mathrm{Cosh}[c]\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^2}\,\mathrm{Tanh}\left[\frac{dx}{2}\right]\right)\right)\right]+\mathrm{ArcTan}\left[\frac{1}{\sqrt{b}}\right.$$

$$\left.\left.\left(\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^2}\right)\mathrm{Sinh}[c]\,\mathrm{Tanh}\left[\frac{dx}{2}\right]+\mathrm{Cosh}[c]\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^2}\,\mathrm{Tanh}\left[\frac{dx}{2}\right]\right)\right)\right]\right)-$$

$$\left.\frac{2\sqrt{a}\sqrt{b}\,\mathrm{Cosh}[c+dx]\,(3a^2+6ab+8b^2+a(3a-4b)\,\mathrm{Cosh}[2(c+dx)])}{(a+2b+a\,\mathrm{Cosh}[2(c+dx)])^2}\right)(a+2b+a\,\mathrm{Cosh}[2c+2dx])^3\,\mathrm{Sech}[c+dx]^6+$$

$$\frac{1}{49152\,a^{9/2}b^{5/2}d\,(a+b\,\mathrm{Sech}[c+dx]^2)^3}\left(3\,(3a^4-40a^3b+720a^2b^2+6720ab^3+8960b^4)\,\mathrm{ArcTan}\left[\frac{1}{\sqrt{b}}\right.\right.$$

$$\left.\left(\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^2}\right)\mathrm{Sinh}[c]\,\mathrm{Tanh}\left[\frac{dx}{2}\right]+\mathrm{Cosh}[c]\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^2}\,\mathrm{Tanh}\left[\frac{dx}{2}\right]\right)\right)\right]+$$

$$3\,(3a^4-40a^3b+720a^2b^2+6720ab^3+8960b^4)\,\mathrm{ArcTan}\left[\frac{1}{\sqrt{b}}\right.$$

$$\left.\left(\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^2}\right)\mathrm{Sinh}[c]\,\mathrm{Tanh}\left[\frac{dx}{2}\right]+\mathrm{Cosh}[c]\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^2}\,\mathrm{Tanh}\left[\frac{dx}{2}\right]\right)\right)\right]+$$

$$\left(2\sqrt{a}\sqrt{b}\,\mathrm{Cosh}[c+dx]\,(9a^5-90a^4b-10144a^3b^2-48672a^2b^3-85120ab^4-53760b^5+a(9a^4-120a^3b-12432a^2b^2-47936ab^3-\right.$$

$$\left.\left.44800b^4)\,\mathrm{Cosh}[2(c+dx)]-128a^2b^2(15a+28b)\,\mathrm{Cosh}[4(c+dx)]+128a^3b^2\,\mathrm{Cosh}[6(c+dx)])\right)\Big/(a+2b+a\,\mathrm{Cosh}[2(c+dx)])^2\right)$$

$$(a+2b+a\,\mathrm{Cosh}[2c+2dx])^3\,\mathrm{Sech}[c+dx]^6+\frac{1}{16384\,a^{7/2}d\,(a+b\,\mathrm{Sech}[c+dx]^2)^3}\,3\,(a+2b+a\,\mathrm{Cosh}[2c+2dx])^3$$

$$\mathrm{Sech}[c+dx]^6$$

$$\left(-\frac{1}{b^{5/2}}3\left(a^3-8a^2b+80ab^2+320b^3\right)\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{dx}{2}\right]+\text{Cosh}[c]\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{dx}{2}\right]\right)\right)\right]-\frac{1}{b^{5/2}}3\left(a^3-8a^2b+80ab^2+320b^3\right)\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{dx}{2}\right]+\text{Cosh}[c]\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{dx}{2}\right]\right)\right)\right]+512\sqrt{a}\,\text{Cosh}[c]\,\text{Cosh}[dx]-\frac{8\sqrt{a}\left(a^3+24a^2b+80ab^2+64b^3\right)\text{Cosh}[c+dx]}{b\left(a+2b+a\,\text{Cosh}[2(c+dx)]\right)^2}-\frac{2\sqrt{a}\left(3a^3-24a^2b-400ab^2-576b^3\right)\text{Cosh}[c+dx]}{b^2\left(a+2b+a\,\text{Cosh}[2(c+dx)]\right)}+512\sqrt{a}\,\text{Sinh}[c]\,\text{Sinh}[dx]\right)$$

Problem 43: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 187 leaves, 7 steps):

$$-\frac{(a+6b)\,x}{2a^4}+\frac{\sqrt{b}\left(15a^2+40ab+24b^2\right)\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+dx]}{\sqrt{a+b}}\right]}{8a^4(a+b)^{3/2}d}+\frac{\text{Cosh}[c+dx]\,\text{Sinh}[c+dx]}{2ad\left(a+b-b\,\text{Tanh}[c+dx]^2\right)^2}+\frac{3b\,\text{Tanh}[c+dx]}{4a^2d\left(a+b-b\,\text{Tanh}[c+dx]^2\right)^2}+\frac{b(11a+12b)\,\text{Tanh}[c+dx]}{8a^3(a+b)\,d\left(a+b-b\,\text{Tanh}[c+dx]^2\right)}$$

Result (type 3, 3106 leaves):

$$-\left(\left(5\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)^3\text{Sech}[c+dx]^6\left(\frac{\left(3a^2+8ab+8b^2\right)\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+dx]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\frac{a\sqrt{b}\left(3a^2+16ab+16b^2+3a(a+2b)\,\text{Cosh}[2(c+dx)]\right)\text{Sinh}[2(c+dx)]}{(a+b)^2\left(a+2b+a\,\text{Cosh}[2(c+dx)]\right)^2}\right)\right)\Big/\left(8192\,b^{5/2}d\left(a+b\,\text{Sech}[c+dx]^2\right)^3\right)\right)-\left(\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)^3\text{Sech}[c+dx]^6\right.$$

$$\left(-\frac{3\,a\,(a+2\,b)\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\mathrm{Tanh}[c+d\,x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}+\frac{\sqrt{b}\,\left(3\,a^3+14\,a^2\,b+24\,a\,b^2+16\,b^3+a\,\left(3\,a^2+4\,a\,b+4\,b^2\right)\,\mathrm{Cosh}[2\,(c+d\,x)]\right)\,\mathrm{Sinh}[2\,(c+d\,x)]}{(a+b)^2\,(a+2\,b+a\,\mathrm{Cosh}[2\,(c+d\,x)])^2}\right)\Bigg/$$

$$\left(2048\,b^{5/2}\,d\,\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^3\right)+\frac{1}{32\,\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^3}$$

$$(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x])^3\,\mathrm{Sech}[c+d\,x]^6\,\left(\frac{1}{(a+b)^2}\left(3\,a^5-10\,a^4\,b+80\,a^3\,b^2+480\,a^2\,b^3+640\,a\,b^4+256\,b^5\right)\right.$$

$$\left(\left(\left(i\,\mathrm{ArcTan}\left[\mathrm{Sech}[d\,x]\,\left(-\frac{i\,\mathrm{Cosh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}+\frac{i\,\mathrm{Sinh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}\right)\right.\right.\right.$$

$$\left.\left.(-a\,\mathrm{Sinh}[d\,x]-2\,b\,\mathrm{Sinh}[d\,x]+a\,\mathrm{Sinh}[2\,c+d\,x])\right]\,\mathrm{Cosh}[2\,c]\right)\Bigg/\left(64\,a^3\,b^2\,\sqrt{a+b}\,d\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}\right)-$$

$$\left(i\,\mathrm{ArcTan}\left[\mathrm{Sech}[d\,x]\,\left(-\frac{i\,\mathrm{Cosh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}+\frac{i\,\mathrm{Sinh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}\right)\right.\right.$$

$$\left.\left.\left.(-a\,\mathrm{Sinh}[d\,x]-2\,b\,\mathrm{Sinh}[d\,x]+a\,\mathrm{Sinh}[2\,c+d\,x])\right]\,\mathrm{Sinh}[2\,c]\right)\Bigg/\left(64\,a^3\,b^2\,\sqrt{a+b}\,d\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}\right)\right)+$$

$$\frac{1}{128\,a^3\,b^2\,(a+b)^2\,d\,(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x])^2}\,\mathrm{Sech}[2\,c]\,\left(768\,a^4\,b^2\,d\,x\,\mathrm{Cosh}[2\,c]+3584\,a^3\,b^3\,d\,x\,\mathrm{Cosh}[2\,c]+6912\,a^2\,b^4\,d\,x\,\mathrm{Cosh}[2\,c]+\right.$$
$$6144\,a\,b^5\,d\,x\,\mathrm{Cosh}[2\,c]+2048\,b^6\,d\,x\,\mathrm{Cosh}[2\,c]+512\,a^4\,b^2\,d\,x\,\mathrm{Cosh}[2\,d\,x]+2048\,a^3\,b^3\,d\,x\,\mathrm{Cosh}[2\,d\,x]+2560\,a^2\,b^4\,d\,x\,\mathrm{Cosh}[2\,d\,x]+$$
$$1024\,a\,b^5\,d\,x\,\mathrm{Cosh}[2\,d\,x]+512\,a^4\,b^2\,d\,x\,\mathrm{Cosh}[4\,c+2\,d\,x]+2048\,a^3\,b^3\,d\,x\,\mathrm{Cosh}[4\,c+2\,d\,x]+2560\,a^2\,b^4\,d\,x\,\mathrm{Cosh}[4\,c+2\,d\,x]+$$
$$1024\,a\,b^5\,d\,x\,\mathrm{Cosh}[4\,c+2\,d\,x]+128\,a^4\,b^2\,d\,x\,\mathrm{Cosh}[2\,c+4\,d\,x]+256\,a^3\,b^3\,d\,x\,\mathrm{Cosh}[2\,c+4\,d\,x]+128\,a^2\,b^4\,d\,x\,\mathrm{Cosh}[2\,c+4\,d\,x]+$$
$$128\,a^4\,b^2\,d\,x\,\mathrm{Cosh}[6\,c+4\,d\,x]+256\,a^3\,b^3\,d\,x\,\mathrm{Cosh}[6\,c+4\,d\,x]+128\,a^2\,b^4\,d\,x\,\mathrm{Cosh}[6\,c+4\,d\,x]-9\,a^6\,\mathrm{Sinh}[2\,c]+12\,a^5\,b\,\mathrm{Sinh}[2\,c]+$$
$$684\,a^4\,b^2\,\mathrm{Sinh}[2\,c]+2880\,a^3\,b^3\,\mathrm{Sinh}[2\,c]+5280\,a^2\,b^4\,\mathrm{Sinh}[2\,c]+4608\,a\,b^5\,\mathrm{Sinh}[2\,c]+1536\,b^6\,\mathrm{Sinh}[2\,c]+9\,a^6\,\mathrm{Sinh}[2\,d\,x]-$$
$$14\,a^5\,b\,\mathrm{Sinh}[2\,d\,x]-608\,a^4\,b^2\,\mathrm{Sinh}[2\,d\,x]-2112\,a^3\,b^3\,\mathrm{Sinh}[2\,d\,x]-2560\,a^2\,b^4\,\mathrm{Sinh}[2\,d\,x]-1024\,a\,b^5\,\mathrm{Sinh}[2\,d\,x]-3\,a^6\,\mathrm{Sinh}[4\,c+2\,d\,x]+$$
$$10\,a^5\,b\,\mathrm{Sinh}[4\,c+2\,d\,x]+304\,a^4\,b^2\,\mathrm{Sinh}[4\,c+2\,d\,x]+1056\,a^3\,b^3\,\mathrm{Sinh}[4\,c+2\,d\,x]+1280\,a^2\,b^4\,\mathrm{Sinh}[4\,c+2\,d\,x]+512\,a\,b^5\,\mathrm{Sinh}[4\,c+2\,d\,x]+$$
$$\left.3\,a^6\,\mathrm{Sinh}[2\,c+4\,d\,x]-12\,a^5\,b\,\mathrm{Sinh}[2\,c+4\,d\,x]-204\,a^4\,b^2\,\mathrm{Sinh}[2\,c+4\,d\,x]-384\,a^3\,b^3\,\mathrm{Sinh}[2\,c+4\,d\,x]-192\,a^2\,b^4\,\mathrm{Sinh}[2\,c+4\,d\,x]\right)\right)+$$

$$\frac{1}{128\,\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^3}\,(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x])^3\,\mathrm{Sech}[c+d\,x]^6$$

$$\left(\frac{1}{(a+b)^2}\left(a^6-8\,a^5\,b+120\,a^4\,b^2+1280\,a^3\,b^3+3200\,a^2\,b^4+3072\,a\,b^5+1024\,b^6\right)\right.$$

$$\left(-\left(\left(3\,i\,\mathrm{ArcTan}\left[\mathrm{Sech}[d\,x]\,\left(-\frac{i\,\mathrm{Cosh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}+\frac{i\,\mathrm{Sinh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}\right)\right.\right.\right.$$

$$\left.\left.(-a\,\mathrm{Sinh}[d\,x]-2\,b\,\mathrm{Sinh}[d\,x]+a\,\mathrm{Sinh}[2\,c+d\,x])\right]\,\mathrm{Cosh}[2\,c]\right)\Bigg/\left(64\,a^4\,b^2\,\sqrt{a+b}\,d\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}\right)\right)+$$

$$\left(3\,\mathrm{i}\,\mathrm{ArcTan}\left[\mathrm{Sech}[d\,x]\left(-\frac{\mathrm{i}\,\mathrm{Cosh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}+\frac{\mathrm{i}\,\mathrm{Sinh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}}\right)\left(-a\,\mathrm{Sinh}[d\,x]-2\,b\,\mathrm{Sinh}[d\,x]+a\,\mathrm{Sinh}[2\,c+d\,x]\right)\right]\mathrm{Sinh}[2\,c]\right)\Big/\left(64\,a^4\,b^2\,\sqrt{a+b}\,d\,\sqrt{b\,\mathrm{Cosh}[4\,c]-b\,\mathrm{Sinh}[4\,c]}\right)+$$

$$\frac{1}{128\,a^4\,b^2\,(a+b)^2\,d\,(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x])^2}\,\mathrm{Sech}[2\,c]\,\big(-4608\,a^5\,b^2\,d\,x\,\mathrm{Cosh}[2\,c]-30\,720\,a^4\,b^3\,d\,x\,\mathrm{Cosh}[2\,c]-$$
$$84\,480\,a^3\,b^4\,d\,x\,\mathrm{Cosh}[2\,c]-119\,808\,a^2\,b^5\,d\,x\,\mathrm{Cosh}[2\,c]-86\,016\,a\,b^6\,d\,x\,\mathrm{Cosh}[2\,c]-24\,576\,b^7\,d\,x\,\mathrm{Cosh}[2\,c]-3072\,a^5\,b^2\,d\,x\,\mathrm{Cosh}[2\,d\,x]-$$
$$18\,432\,a^4\,b^3\,d\,x\,\mathrm{Cosh}[2\,d\,x]-39\,936\,a^3\,b^4\,d\,x\,\mathrm{Cosh}[2\,d\,x]-36\,864\,a^2\,b^5\,d\,x\,\mathrm{Cosh}[2\,d\,x]-12\,288\,a\,b^6\,d\,x\,\mathrm{Cosh}[2\,d\,x]-$$
$$3072\,a^5\,b^2\,d\,x\,\mathrm{Cosh}[4\,c+2\,d\,x]-18\,432\,a^4\,b^3\,d\,x\,\mathrm{Cosh}[4\,c+2\,d\,x]-39\,936\,a^3\,b^4\,d\,x\,\mathrm{Cosh}[4\,c+2\,d\,x]-36\,864\,a^2\,b^5\,d\,x\,\mathrm{Cosh}[4\,c+2\,d\,x]-$$
$$12\,288\,a\,b^6\,d\,x\,\mathrm{Cosh}[4\,c+2\,d\,x]-768\,a^5\,b^2\,d\,x\,\mathrm{Cosh}[2\,c+4\,d\,x]-3072\,a^4\,b^3\,d\,x\,\mathrm{Cosh}[2\,c+4\,d\,x]-3840\,a^3\,b^4\,d\,x\,\mathrm{Cosh}[2\,c+4\,d\,x]-$$
$$1536\,a^2\,b^5\,d\,x\,\mathrm{Cosh}[2\,c+4\,d\,x]-768\,a^5\,b^2\,d\,x\,\mathrm{Cosh}[6\,c+4\,d\,x]-3072\,a^4\,b^3\,d\,x\,\mathrm{Cosh}[6\,c+4\,d\,x]-3840\,a^3\,b^4\,d\,x\,\mathrm{Cosh}[6\,c+4\,d\,x]-$$
$$1536\,a^2\,b^5\,d\,x\,\mathrm{Cosh}[6\,c+4\,d\,x]+9\,a^7\,\mathrm{Sinh}[2\,c]-54\,a^6\,b\,\mathrm{Sinh}[2\,c]-2392\,a^5\,b^2\,\mathrm{Sinh}[2\,c]-13\,968\,a^4\,b^3\,\mathrm{Sinh}[2\,c]-$$
$$36\,480\,a^3\,b^4\,\mathrm{Sinh}[2\,c]-50\,432\,a^2\,b^5\,\mathrm{Sinh}[2\,c]-35\,840\,a\,b^6\,\mathrm{Sinh}[2\,c]-10\,240\,b^7\,\mathrm{Sinh}[2\,c]-9\,a^7\,\mathrm{Sinh}[2\,d\,x]+56\,a^6\,b\,\mathrm{Sinh}[2\,d\,x]+$$
$$2552\,a^5\,b^2\,\mathrm{Sinh}[2\,d\,x]+13\,184\,a^4\,b^3\,\mathrm{Sinh}[2\,d\,x]+27\,072\,a^3\,b^4\,\mathrm{Sinh}[2\,d\,x]+24\,576\,a^2\,b^5\,\mathrm{Sinh}[2\,d\,x]+8192\,a\,b^6\,\mathrm{Sinh}[2\,d\,x]+$$
$$3\,a^7\,\mathrm{Sinh}[4\,c+2\,d\,x]-24\,a^6\,b\,\mathrm{Sinh}[4\,c+2\,d\,x]-600\,a^5\,b^2\,\mathrm{Sinh}[4\,c+2\,d\,x]-3200\,a^4\,b^3\,\mathrm{Sinh}[4\,c+2\,d\,x]-6720\,a^3\,b^4\,\mathrm{Sinh}[4\,c+2\,d\,x]-$$
$$6144\,a^2\,b^5\,\mathrm{Sinh}[4\,c+2\,d\,x]-2048\,a\,b^6\,\mathrm{Sinh}[4\,c+2\,d\,x]-3\,a^7\,\mathrm{Sinh}[2\,c+4\,d\,x]+26\,a^6\,b\,\mathrm{Sinh}[2\,c+4\,d\,x]+992\,a^5\,b^2\,\mathrm{Sinh}[2\,c+4\,d\,x]+$$
$$3648\,a^4\,b^3\,\mathrm{Sinh}[2\,c+4\,d\,x]+4480\,a^3\,b^4\,\mathrm{Sinh}[2\,c+4\,d\,x]+1792\,a^2\,b^5\,\mathrm{Sinh}[2\,c+4\,d\,x]+256\,a^5\,b^2\,\mathrm{Sinh}[6\,c+4\,d\,x]+$$
$$1024\,a^4\,b^3\,\mathrm{Sinh}[6\,c+4\,d\,x]+1280\,a^3\,b^4\,\mathrm{Sinh}[6\,c+4\,d\,x]+512\,a^2\,b^5\,\mathrm{Sinh}[6\,c+4\,d\,x]+64\,a^5\,b^2\,\mathrm{Sinh}[4\,c+6\,d\,x]+$$
$$128\,a^4\,b^3\,\mathrm{Sinh}[4\,c+6\,d\,x]+64\,a^3\,b^4\,\mathrm{Sinh}[4\,c+6\,d\,x]+64\,a^5\,b^2\,\mathrm{Sinh}[8\,c+6\,d\,x]+128\,a^4\,b^3\,\mathrm{Sinh}[8\,c+6\,d\,x]+64\,a^3\,b^4\,\mathrm{Sinh}[8\,c+6\,d\,x]\big)+$$

$$\frac{1}{4096\,b^2\,(a+b)^2\,d\,(a+b\,\mathrm{Sech}[c+d\,x]^2)^3}\,(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x])^3\,\mathrm{Sech}[c+d\,x]^6$$
$$\left(\frac{6\,a^2\,\mathrm{ArcTanh}\left[\frac{\mathrm{Sech}[d\,x]\,(\mathrm{Cosh}[2\,c]-\mathrm{Sinh}[2\,c])\,((a+2\,b)\,\mathrm{Sinh}[d\,x]-a\,\mathrm{Sinh}[2\,c+d\,x])}{2\sqrt{a+b}\,\sqrt{b\,(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^4}}\right](\mathrm{Cosh}[2\,c]-\mathrm{Sinh}[2\,c])}{\sqrt{a+b}\,\sqrt{b\,(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^4}}+\right.$$
$$\big(a\,\mathrm{Sech}[2\,c]\,\big((-9\,a^4-16\,a^3\,b+48\,a^2\,b^2+128\,a\,b^3+64\,b^4)\,\mathrm{Sinh}[2\,d\,x]+$$
$$a\,(-3\,a^3+2\,a^2\,b+24\,a\,b^2+16\,b^3)\,\mathrm{Sinh}[2\,(c+2\,d\,x)]+(3\,a^4-64\,a^2\,b^2-128\,a\,b^3-64\,b^4)\,\mathrm{Sinh}[4\,c+2\,d\,x]\big)+$$
$$\left.(9\,a^5+18\,a^4\,b-64\,a^3\,b^2-256\,a^2\,b^3-320\,a\,b^4-128\,b^5)\,\mathrm{Tanh}[2\,c]\big)\Big/\left(a^2\,(a+2\,b+a\,\mathrm{Cosh}[2\,(c+d\,x)])^2\right)\right)$$

Problem 44: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 116 leaves, 5 steps):

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

Result (type 3, 1272 leaves):

$$\frac{1}{4096 a^{5/2} b^{5/2} d \left(a+b\,\text{Sech}[c+d x]^2\right)^3}\,5 \left(3 \left(a^2-4 a b+16 b^2\right) \text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-\mathrm{i}\sqrt{a+b}\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d x}{2}\right]+\right.\right.\right.$$

$$\left.\left.\text{Cosh}[c]\left(\sqrt{a}-\mathrm{i}\sqrt{a+b}\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\,\text{Tanh}\left[\frac{d x}{2}\right]\right)\right)\right]+3\left(a^2-4 a b+16 b^2\right)\text{ArcTan}\left[\frac{1}{\sqrt{b}}\right.$$

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

$$\left.\frac{8\sqrt{a}\,b^{3/2}\left(a^2+12 a b+16 b^2\right)\text{Cosh}[c+d x]}{\left(a+2 b+a\,\text{Cosh}[2(c+d x)]\right)^2}+\frac{2\sqrt{a}\sqrt{b}\left(3 a^2-12 a b-80 b^2\right)\text{Cosh}[c+d x]}{a+2 b+a\,\text{Cosh}[2(c+d x)]}\right)\left(a+2 b+a\,\text{Cosh}[2 c+2 d x]\right)^3\text{Sech}[c+d x]^6+$$

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

$$\left.\left(a+2 b+a\,\text{Cosh}[2 c+2 d x]\right)^3\text{Sech}[c+d x]^6\right)\Big/\left(4096 b^{5/2} d\left(a+b\,\text{Sech}[c+d x]^2\right)^3\right)+$$

$$\frac{1}{4096 a^{3/2} b^{5/2} d\left(a+b\,\text{Sech}[c+d x]^2\right)^3}\,9\left(-(3 a-4 b)\left(\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-\mathrm{i}\sqrt{a+b}\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d x}{2}\right]+\right.\right.\right.\right.$$

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

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

$$\left.\frac{2\sqrt{a}\sqrt{b}\,\text{Cosh}[c+d x]\left(3 a^2+6 a b+8 b^2+a(3 a-4 b)\,\text{Cosh}[2(c+d x)]\right)}{\left(a+2 b+a\,\text{Cosh}[2(c+d x)]\right)^2}\right)\left(a+2 b+a\,\text{Cosh}[2 c+2 d x]\right)^3\text{Sech}[c+d x]^6+$$

$$\frac{1}{4096 a^{7/2} d\left(a+b\,\text{Sech}[c+d x]^2\right)^3}\left(a+2 b+a\,\text{Cosh}[2 c+2 d x]\right)^3\text{Sech}[c+d x]^6$$

$$\left(-\frac{1}{b^{5/2}}3\left(a^3-8a^2b+80ab^2+320b^3\right)\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{dx}{2}\right]+\text{Cosh}[c]\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{dx}{2}\right]\right)\right)\right]-\frac{1}{b^{5/2}}3\left(a^3-8a^2b+80ab^2+320b^3\right)\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{dx}{2}\right]+\text{Cosh}[c]\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{dx}{2}\right]\right)\right)\right]+512\sqrt{a}\,\text{Cosh}[c]\,\text{Cosh}[dx]-\frac{8\sqrt{a}\left(a^3+24a^2b+80ab^2+64b^3\right)\text{Cosh}[c+dx]}{b\,(a+2b+a\,\text{Cosh}[2(c+dx)])^2}-\frac{2\sqrt{a}\left(3a^3-24a^2b-400ab^2-576b^3\right)\text{Cosh}[c+dx]}{b^2\,(a+2b+a\,\text{Cosh}[2(c+dx)])}+512\sqrt{a}\,\text{Sinh}[c]\,\text{Sinh}[dx]\right)$$

Problem 45: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 154 leaves, 6 steps):

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

Result (type 3, 440 leaves):

$$\frac{1}{64(a+b)^3d\left(a+b\,\text{Sech}[c+dx]^2\right)^3}(a+2b+a\,\text{Cosh}[2(c+dx)])\,\text{Sech}[c+dx]^5\left(\frac{8b^2(a+b)^2}{a^2}-\frac{2b(a+b)(9a+5b)(a+2b+a\,\text{Cosh}[2(c+dx)])}{a^2}+\frac{1}{a^{5/2}}\sqrt{b}\left(15a^2+10ab+3b^2\right)\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{dx}{2}\right]+\text{Cosh}[c]\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{dx}{2}\right]\right)\right)\right](a+2b+a\,\text{Cosh}[2(c+dx)])^2\,\text{Sech}[c+dx]+\frac{1}{a^{5/2}}\sqrt{b}\left(15a^2+10ab+3b^2\right)\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{dx}{2}\right]+\text{Cosh}[c]\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{dx}{2}\right]\right)\right)\right](a+2b+a\,\text{Cosh}[2(c+dx)])^2\,\text{Sech}[c+dx]-8(a+2b+a\,\text{Cosh}[2(c+dx)])^2\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sech}[c+dx]+8(a+2b+a\,\text{Cosh}[2(c+dx)])^2\,\text{Log}\left[\text{Sinh}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sech}[c+dx]\right)$$

Problem 46: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 981 leaves):

$$\Bigg(\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)^3\text{Sech}[c+dx]^6\Bigg(-\Bigg(\Bigg(15\,i\,b\,\text{ArcTan}\Big[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)$$
$$\left(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx]\right)\Big]\,\text{Cosh}[2c]\Bigg)\Bigg/\left(64\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\Bigg)+$$
$$\Bigg(15\,i\,b\,\text{ArcTan}\Big[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)$$
$$\left(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx]\right)\Big]\,\text{Sinh}[2c]\Bigg)\Bigg/\left(64\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\Bigg)\Bigg)\Bigg/$$
$$\left((a+b)^3\left(a+b\,\text{Sech}[c+dx]^2\right)^3\right)+\frac{1}{512\,a^2\,(a+b)^3\,d\,\left(a+b\,\text{Sech}[c+dx]^2\right)^3}\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)$$
$$\text{Csch}[c]$$
$$\text{Csch}[c+dx]$$
$$\text{Sech}[2c]$$
$$\text{Sech}[c+dx]^6$$
$$\big(-32a^4\,\text{Sinh}[dx]-64a^3b\,\text{Sinh}[dx]+22a^2b^2\,\text{Sinh}[dx]+80ab^3\,\text{Sinh}[dx]+16b^4\,\text{Sinh}[dx]+32a^4\,\text{Sinh}[3dx]+46a^3b\,\text{Sinh}[3dx]-$$
$$54a^2b^2\,\text{Sinh}[3dx]-8ab^3\,\text{Sinh}[3dx]-48a^4\,\text{Sinh}[2c-dx]-128a^3b\,\text{Sinh}[2c-dx]-106a^2b^2\,\text{Sinh}[2c-dx]+$$
$$80ab^3\,\text{Sinh}[2c-dx]+16b^4\,\text{Sinh}[2c-dx]+48a^4\,\text{Sinh}[2c+dx]+146a^3b\,\text{Sinh}[2c+dx]+182a^2b^2\,\text{Sinh}[2c+dx]+$$
$$80ab^3\,\text{Sinh}[2c+dx]+16b^4\,\text{Sinh}[2c+dx]-32a^4\,\text{Sinh}[4c+dx]-82a^3b\,\text{Sinh}[4c+dx]-54a^2b^2\,\text{Sinh}[4c+dx]-$$
$$80ab^3\,\text{Sinh}[4c+dx]-16b^4\,\text{Sinh}[4c+dx]-8a^4\,\text{Sinh}[2c+3dx]+18a^3b\,\text{Sinh}[2c+3dx]+54a^2b^2\,\text{Sinh}[2c+3dx]+$$
$$8ab^3\,\text{Sinh}[2c+3dx]+32a^4\,\text{Sinh}[4c+3dx]+73a^3b\,\text{Sinh}[4c+3dx]+24a^2b^2\,\text{Sinh}[4c+3dx]+8ab^3\,\text{Sinh}[4c+3dx]-$$
$$8a^4\,\text{Sinh}[6c+3dx]-9a^3b\,\text{Sinh}[6c+3dx]-24a^2b^2\,\text{Sinh}[6c+3dx]-8ab^3\,\text{Sinh}[6c+3dx]+8a^4\,\text{Sinh}[2c+5dx]-$$
$$9a^3b\,\text{Sinh}[2c+5dx]-2a^2b^2\,\text{Sinh}[2c+5dx]+9a^3b\,\text{Sinh}[4c+5dx]+2a^2b^2\,\text{Sinh}[4c+5dx]+8a^4\,\text{Sinh}[6c+5dx]\big)$$

Problem 47: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 213 leaves, 7 steps):

$$-\frac{\sqrt{b}\left(15 a^2-10 a b-b^2\right)\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Cosh}[c+d x]}{\sqrt{b}}\right]}{8 a^{3/2}(a+b)^4 d}+\frac{(a-5 b)\,\text{ArcTanh}[\text{Cosh}[c+d x]]}{2 (a+b)^4 d}+\frac{(2 a-b)\,b\,\text{Cosh}[c+d x]}{4 a (a+b)^2 d\left(b+a\,\text{Cosh}[c+d x]^2\right)^2}-\frac{\left(4 a^2-9 a b-b^2\right)\text{Cosh}[c+d x]}{8 a (a+b)^3 d\left(b+a\,\text{Cosh}[c+d x]^2\right)}-\frac{\text{Cosh}[c+d x]\,\text{Coth}[c+d x]^2}{2 (a+b) d\left(b+a\,\text{Cosh}[c+d x]^2\right)^2}$$

Result (type 3, 524 leaves):

$$\frac{1}{64 (a+b)^4 d\left(a+b\,\text{Sech}[c+d x]^2\right)^3}\Bigg(\left(a+2 b+a\,\text{Cosh}[2 (c+d x)]\right)\text{Sech}[c+d x]^5\Bigg(-\frac{8 b^2 (a+b)^2}{a}+\frac{2 b (a+b)(9 a+b)\left(a+2 b+a\,\text{Cosh}[2 (c+d x)]\right)}{a}+\frac{1}{a^{3/2}}\sqrt{b}\left(-15 a^2+10 a b+b^2\right)$$
$$\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d x}{2}\right]+\text{Cosh}[c]\left(\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{d x}{2}\right]\right)\right)\right]$$
$$\left(a+2 b+a\,\text{Cosh}[2 (c+d x)]\right)^2\text{Sech}[c+d x]+\frac{1}{a^{3/2}}\sqrt{b}\left(-15 a^2+10 a b+b^2\right)$$
$$\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d x}{2}\right]+\text{Cosh}[c]\left(\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\left[\frac{d x}{2}\right]\right)\right)\right]$$
$$\left(a+2 b+a\,\text{Cosh}[2 (c+d x)]\right)^2\text{Sech}[c+d x]-(a+b)\left(a+2 b+a\,\text{Cosh}[2 (c+d x)]\right)^2\text{Csch}\left[\frac{1}{2}(c+d x)\right]^2\text{Sech}[c+d x]+$$
$$4 (a-5 b)\left(a+2 b+a\,\text{Cosh}[2 (c+d x)]\right)^2\text{Log}\left[\text{Cosh}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sech}[c+d x]-4 (a-5 b)\left(a+2 b+a\,\text{Cosh}[2 (c+d x)]\right)^2$$
$$\text{Log}\left[\text{Sinh}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sech}[c+d x]-(a+b)\left(a+2 b+a\,\text{Cosh}[2 (c+d x)]\right)^2\text{Sech}\left[\frac{1}{2}(c+d x)\right]^2\text{Sech}[c+d x]\Bigg)$$

Problem 48: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 165 leaves, 6 steps):

$$-\frac{5\,(3\,a-4\,b)\,\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+d\,x]}{\sqrt{a+b}}\right]}{8\,(a+b)^{9/2}\,d}+\frac{(a-2\,b)\,\text{Coth}[c+d\,x]}{(a+b)^4\,d}-\frac{\text{Coth}[c+d\,x]^3}{3\,(a+b)^3\,d}-\frac{a\,b\,\text{Tanh}[c+d\,x]}{4\,(a+b)^3\,d\,\left(a+b-b\,\text{Tanh}[c+d\,x]^2\right)^2}-\frac{(7\,a-4\,b)\,b\,\text{Tanh}[c+d\,x]}{8\,(a+b)^4\,d\,\left(a+b-b\,\text{Tanh}[c+d\,x]^2\right)}$$

Result (type 3, 1228 leaves):

$$\Bigg((3\,a-4\,b)\,(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])^3\,\text{Sech}[c+d\,x]^6$$
$$\Bigg(\Bigg(5\,i\,b\,\text{ArcTan}\Big[\text{Sech}[d\,x]\,\Big(-\frac{i\,\text{Cosh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}+\frac{i\,\text{Sinh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}\Big)$$
$$(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x])\Big]\,\text{Cosh}[2\,c]\Bigg)\Big/\left(64\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)-$$
$$\Bigg(5\,i\,b\,\text{ArcTan}\Big[\text{Sech}[d\,x]\,\Big(-\frac{i\,\text{Cosh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}+\frac{i\,\text{Sinh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}\Big)$$
$$(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x])\Big]\,\text{Sinh}[2\,c]\Bigg)\Big/\left(64\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)\Bigg)\Bigg)\Big/$$
$$\left((a+b)^4\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3\right)+\frac{1}{6144\,a\,(a+b)^4\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3}\,(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])$$
$$\text{Csch}[c]$$
$$\text{Csch}[c+d\,x]^3$$
$$\text{Sech}[2\,c]$$
$$\text{Sech}[c+d\,x]^6$$
$$\big(-176\,a^4\,\text{Sinh}[d\,x]-488\,a^3\,b\,\text{Sinh}[d\,x]-252\,a^2\,b^2\,\text{Sinh}[d\,x]-504\,a\,b^3\,\text{Sinh}[d\,x]-144\,b^4\,\text{Sinh}[d\,x]+96\,a^4\,\text{Sinh}[3\,d\,x]+71\,a^3\,b\,\text{Sinh}[3\,d\,x]-$$
$$344\,a^2\,b^2\,\text{Sinh}[3\,d\,x]+1208\,a\,b^3\,\text{Sinh}[3\,d\,x]-48\,b^4\,\text{Sinh}[3\,d\,x]-224\,a^4\,\text{Sinh}[2\,c-d\,x]-576\,a^3\,b\,\text{Sinh}[2\,c-d\,x]-124\,a^2\,b^2\,\text{Sinh}[2\,c-d\,x]+$$
$$2184\,a\,b^3\,\text{Sinh}[2\,c-d\,x]-144\,b^4\,\text{Sinh}[2\,c-d\,x]+224\,a^4\,\text{Sinh}[2\,c+d\,x]+657\,a^3\,b\,\text{Sinh}[2\,c+d\,x]+538\,a^2\,b^2\,\text{Sinh}[2\,c+d\,x]-$$
$$984\,a\,b^3\,\text{Sinh}[2\,c+d\,x]-144\,b^4\,\text{Sinh}[2\,c+d\,x]-176\,a^4\,\text{Sinh}[4\,c+d\,x]-569\,a^3\,b\,\text{Sinh}[4\,c+d\,x]-666\,a^2\,b^2\,\text{Sinh}[4\,c+d\,x]-$$
$$1704\,a\,b^3\,\text{Sinh}[4\,c+d\,x]+144\,b^4\,\text{Sinh}[4\,c+d\,x]-48\,a^4\,\text{Sinh}[2\,c+3\,d\,x]-111\,a^3\,b\,\text{Sinh}[2\,c+3\,d\,x]-360\,a^2\,b^2\,\text{Sinh}[2\,c+3\,d\,x]-$$
$$312\,a\,b^3\,\text{Sinh}[2\,c+3\,d\,x]+48\,b^4\,\text{Sinh}[2\,c+3\,d\,x]+96\,a^4\,\text{Sinh}[4\,c+3\,d\,x]+152\,a^3\,b\,\text{Sinh}[4\,c+3\,d\,x]-146\,a^2\,b^2\,\text{Sinh}[4\,c+3\,d\,x]+$$
$$728\,a\,b^3\,\text{Sinh}[4\,c+3\,d\,x]+48\,b^4\,\text{Sinh}[4\,c+3\,d\,x]-48\,a^4\,\text{Sinh}[6\,c+3\,d\,x]-192\,a^3\,b\,\text{Sinh}[6\,c+3\,d\,x]-558\,a^2\,b^2\,\text{Sinh}[6\,c+3\,d\,x]+$$
$$168\,a\,b^3\,\text{Sinh}[6\,c+3\,d\,x]-48\,b^4\,\text{Sinh}[6\,c+3\,d\,x]-16\,a^4\,\text{Sinh}[2\,c+5\,d\,x]+598\,a^2\,b^2\,\text{Sinh}[2\,c+5\,d\,x]-48\,a\,b^3\,\text{Sinh}[2\,c+5\,d\,x]-$$
$$72\,a^3\,b\,\text{Sinh}[4\,c+5\,d\,x]-150\,a^2\,b^2\,\text{Sinh}[4\,c+5\,d\,x]+48\,a\,b^3\,\text{Sinh}[4\,c+5\,d\,x]-16\,a^4\,\text{Sinh}[6\,c+5\,d\,x]-27\,a^3\,b\,\text{Sinh}[6\,c+5\,d\,x]+$$
$$388\,a^2\,b^2\,\text{Sinh}[6\,c+5\,d\,x]-45\,a^3\,b\,\text{Sinh}[8\,c+5\,d\,x]+60\,a^2\,b^2\,\text{Sinh}[8\,c+5\,d\,x]-16\,a^4\,\text{Sinh}[4\,c+7\,d\,x]+83\,a^3\,b\,\text{Sinh}[4\,c+7\,d\,x]-$$
$$6\,a^2\,b^2\,\text{Sinh}[4\,c+7\,d\,x]-27\,a^3\,b\,\text{Sinh}[6\,c+7\,d\,x]+6\,a^2\,b^2\,\text{Sinh}[6\,c+7\,d\,x]-16\,a^4\,\text{Sinh}[8\,c+7\,d\,x]+56\,a^3\,b\,\text{Sinh}[8\,c+7\,d\,x]\big)$$

Problem 62: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 116 leaves):

$$\frac{a^2 \text{Tanh}[c+d x]}{d}+\frac{4 a b \text{Tanh}[c+d x]}{3 d}+\frac{8 b^2 \text{Tanh}[c+d x]}{15 d}+\frac{2 a b \text{Sech}[c+d x]^2 \text{Tanh}[c+d x]}{3 d}+\frac{4 b^2 \text{Sech}[c+d x]^2 \text{Tanh}[c+d x]}{15 d}+\frac{b^2 \text{Sech}[c+d x]^4 \text{Tanh}[c+d x]}{5 d}$$

Problem 64: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 190 leaves):

$$\frac{2 a^2 \text{Tanh}[c+d x]}{3 d}+\frac{16 a b \text{Tanh}[c+d x]}{15 d}+\frac{16 b^2 \text{Tanh}[c+d x]}{35 d}+\frac{a^2 \text{Sech}[c+d x]^2 \text{Tanh}[c+d x]}{3 d}+\frac{8 a b \text{Sech}[c+d x]^2 \text{Tanh}[c+d x]}{15 d}+\frac{8 b^2 \text{Sech}[c+d x]^2 \text{Tanh}[c+d x]}{35 d}+\frac{2 a b \text{Sech}[c+d x]^4 \text{Tanh}[c+d x]}{5 d}+\frac{6 b^2 \text{Sech}[c+d x]^4 \text{Tanh}[c+d x]}{35 d}+\frac{b^2 \text{Sech}[c+d x]^6 \text{Tanh}[c+d x]}{7 d}$$

Problem 68: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 93 leaves, 6 steps):

$$\frac{3 b \left(8 a^2+4 a b+b^2\right) \text{ArcTan}[\text{Sinh}[c+d x]]}{8 d}+\frac{a^3 \text{Sinh}[c+d x]}{d}+\frac{3 b^2 (4 a+b) \text{Sech}[c+d x] \text{Tanh}[c+d x]}{8 d}+\frac{b^3 \text{Sech}[c+d x]^3 \text{Tanh}[c+d x]}{4 d}$$

Result (type 3, 189 leaves):

$$\frac{1}{d\,(a+2b+a\,\mathrm{Cosh}[2\,(c+d\,x)])^3}\,(b+a\,\mathrm{Cosh}[c+d\,x]^2)^3\,\mathrm{Sech}[c]\,\mathrm{Sech}[c+d\,x]^4$$
$$\Big(6\,b\,(8\,a^2+4\,a\,b+b^2)\,\mathrm{ArcTan}\Big[\mathrm{Tanh}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\,\mathrm{Cosh}[c]\,\mathrm{Cosh}[c+d\,x]^4+2\,b^3\,\mathrm{Cosh}[c+d\,x]\,\mathrm{Sinh}[c]+3\,b^2\,(4\,a+b)\,\mathrm{Cosh}[c+d\,x]^3\,\mathrm{Sinh}[c]+$$
$$4\,a^3\,\mathrm{Cosh}[d\,x]\,\mathrm{Cosh}[c+d\,x]^4\,\mathrm{Sinh}[2\,c]+2\,b^3\,\mathrm{Sinh}[d\,x]+3\,b^2\,(4\,a+b)\,\mathrm{Cosh}[c+d\,x]^2\,\mathrm{Sinh}[d\,x]+8\,a^3\,\mathrm{Cosh}[c]^2\,\mathrm{Cosh}[c+d\,x]^4\,\mathrm{Sinh}[d\,x]\Big)$$

Problem 70: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 74 leaves, 3 steps):

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

Result (type 3, 319 leaves):

$$\frac{1}{280\,d\,(a+2\,b+a\,\mathrm{Cosh}[2\,(c+d\,x)])^3}$$
$$\mathrm{Sech}[c]\,\mathrm{Sech}[c+d\,x]\,(a+b\,\mathrm{Sech}[c+d\,x]^2)^3\,\Big(140\,(5\,a^3+11\,a^2\,b+10\,a\,b^2+4\,b^3)\,\mathrm{Sinh}[d\,x]-35\,a\,(15\,a^2+26\,a\,b+16\,b^2)\,\mathrm{Sinh}[2\,c+d\,x]+$$
$$525\,a^3\,\mathrm{Sinh}[2\,c+3\,d\,x]+1260\,a^2\,b\,\mathrm{Sinh}[2\,c+3\,d\,x]+1176\,a\,b^2\,\mathrm{Sinh}[2\,c+3\,d\,x]+336\,b^3\,\mathrm{Sinh}[2\,c+3\,d\,x]-210\,a^3\,\mathrm{Sinh}[4\,c+3\,d\,x]-$$
$$210\,a^2\,b\,\mathrm{Sinh}[4\,c+3\,d\,x]+210\,a^3\,\mathrm{Sinh}[4\,c+5\,d\,x]+490\,a^2\,b\,\mathrm{Sinh}[4\,c+5\,d\,x]+392\,a\,b^2\,\mathrm{Sinh}[4\,c+5\,d\,x]+112\,b^3\,\mathrm{Sinh}[4\,c+5\,d\,x]-$$
$$35\,a^3\,\mathrm{Sinh}[6\,c+5\,d\,x]+35\,a^3\,\mathrm{Sinh}[6\,c+7\,d\,x]+70\,a^2\,b\,\mathrm{Sinh}[6\,c+7\,d\,x]+56\,a\,b^2\,\mathrm{Sinh}[6\,c+7\,d\,x]+16\,b^3\,\mathrm{Sinh}[6\,c+7\,d\,x]\Big)$$

Problem 71: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 196 leaves, 6 steps):

$$\frac{(64\,a^3+144\,a^2\,b+120\,a\,b^2+35\,b^3)\,\mathrm{ArcTan}[\mathrm{Sinh}[c+d\,x]]}{128\,d}+$$
$$\frac{(64\,a^3+144\,a^2\,b+120\,a\,b^2+35\,b^3)\,\mathrm{Sech}[c+d\,x]\,\mathrm{Tanh}[c+d\,x]}{128\,d}+\frac{b\,(72\,a^2+92\,a\,b+35\,b^2)\,\mathrm{Sech}[c+d\,x]^3\,\mathrm{Tanh}[c+d\,x]}{192\,d}+$$
$$\frac{b\,(12\,a+7\,b)\,\mathrm{Sech}[c+d\,x]^5\,(a+b+a\,\mathrm{Sinh}[c+d\,x]^2)\,\mathrm{Tanh}[c+d\,x]}{48\,d}+\frac{b\,\mathrm{Sech}[c+d\,x]^7\,(a+b+a\,\mathrm{Sinh}[c+d\,x]^2)^2\,\mathrm{Tanh}[c+d\,x]}{8\,d}$$

Result (type 3, 629 leaves):

$$\frac{\left(64 a^3+144 a^2 b+120 a b^2+35 b^3\right) \text{ArcTan}\left[\text{Tanh}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Cosh}[c+d x]^6 \left(a+b \text{Sech}[c+d x]^2\right)^3}{8 d (a+2 b+a \text{Cosh}[2 c+2 d x])^3}+$$
$$\frac{\text{Cosh}[c+d x] \text{Sech}[c] \left(a+b \text{Sech}[c+d x]^2\right)^3 \left(24 a b^2 \text{Sinh}[c]+7 b^3 \text{Sinh}[c]\right)}{6 d (a+2 b+a \text{Cosh}[2 c+2 d x])^3}+$$
$$\frac{\text{Cosh}[c+d x]^3 \text{Sech}[c] \left(a+b \text{Sech}[c+d x]^2\right)^3 \left(144 a^2 b \text{Sinh}[c]+120 a b^2 \text{Sinh}[c]+35 b^3 \text{Sinh}[c]\right)}{24 d (a+2 b+a \text{Cosh}[2 c+2 d x])^3}+$$
$$\left(\text{Cosh}[c+d x]^5 \text{Sech}[c] \left(a+b \text{Sech}[c+d x]^2\right)^3 \left(64 a^3 \text{Sinh}[c]+144 a^2 b \text{Sinh}[c]+120 a b^2 \text{Sinh}[c]+35 b^3 \text{Sinh}[c]\right)\right) \Big/$$
$$\left(16 d (a+2 b+a \text{Cosh}[2 c+2 d x])^3\right)+\frac{b^3 \text{Sech}[c] \text{Sech}[c+d x]^2 \left(a+b \text{Sech}[c+d x]^2\right)^3 \text{Sinh}[d x]}{d (a+2 b+a \text{Cosh}[2 c+2 d x])^3}+$$
$$\frac{\text{Sech}[c] \left(a+b \text{Sech}[c+d x]^2\right)^3 \left(24 a b^2 \text{Sinh}[d x]+7 b^3 \text{Sinh}[d x]\right)}{6 d (a+2 b+a \text{Cosh}[2 c+2 d x])^3}+$$
$$\frac{\text{Cosh}[c+d x]^2 \text{Sech}[c] \left(a+b \text{Sech}[c+d x]^2\right)^3 \left(144 a^2 b \text{Sinh}[d x]+120 a b^2 \text{Sinh}[d x]+35 b^3 \text{Sinh}[d x]\right)}{24 d (a+2 b+a \text{Cosh}[2 c+2 d x])^3}+$$
$$\left(\text{Cosh}[c+d x]^4 \text{Sech}[c] \left(a+b \text{Sech}[c+d x]^2\right)^3 \left(64 a^3 \text{Sinh}[d x]+144 a^2 b \text{Sinh}[d x]+120 a b^2 \text{Sinh}[d x]+35 b^3 \text{Sinh}[d x]\right)\right) \Big/$$
$$\left(16 d (a+2 b+a \text{Cosh}[2 c+2 d x])^3\right)+\frac{b^3 \text{Sech}[c+d x] \left(a+b \text{Sech}[c+d x]^2\right)^3 \text{Tanh}[c]}{d (a+2 b+a \text{Cosh}[2 c+2 d x])^3}$$

Problem 72: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 108 leaves, 3 steps):

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

Result (type 3, 348 leaves):

$$\frac{1}{40320 d} \text{Sech}[c] \text{Sech}[c+d x]^9 \left(63 \left(125 a^3+324 a^2 b+312 a b^2+128 b^3\right) \text{Sinh}[d x]-315 a \left(17 a^2+36 a b+24 b^2\right) \text{Sinh}[2 c+d x]+6825 a^3 \text{Sinh}[2 c+3 d x]+\right.$$
$$18648 a^2 b \text{Sinh}[2 c+3 d x]+18144 a b^2 \text{Sinh}[2 c+3 d x]+5376 b^3 \text{Sinh}[2 c+3 d x]-1995 a^3 \text{Sinh}[4 c+3 d x]-$$
$$2520 a^2 b \text{Sinh}[4 c+3 d x]+3465 a^3 \text{Sinh}[4 c+5 d x]+9072 a^2 b \text{Sinh}[4 c+5 d x]+7776 a b^2 \text{Sinh}[4 c+5 d x]+$$
$$2304 b^3 \text{Sinh}[4 c+5 d x]-315 a^3 \text{Sinh}[6 c+5 d x]+945 a^3 \text{Sinh}[6 c+7 d x]+2268 a^2 b \text{Sinh}[6 c+7 d x]+1944 a b^2 \text{Sinh}[6 c+7 d x]+$$
$$\left.576 b^3 \text{Sinh}[6 c+7 d x]+105 a^3 \text{Sinh}[8 c+9 d x]+252 a^2 b \text{Sinh}[8 c+9 d x]+216 a b^2 \text{Sinh}[8 c+9 d x]+64 b^3 \text{Sinh}[8 c+9 d x]\right)$$

Problem 76: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 147 leaves):

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

Problem 77: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 36 leaves, 2 steps):

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

Result (type 3, 114 leaves):

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

Problem 79: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 194 leaves):

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

Problem 80: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 182 leaves):

$$\left((a+2b+a\operatorname{Cosh}[2(c+dx)])\operatorname{Sech}[c+dx]^2\left(a\operatorname{ArcTanh}\left[\frac{\operatorname{Sech}[dx](\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c])((a+2b)\operatorname{Sinh}[dx]-a\operatorname{Sinh}[2c+dx])}{2\sqrt{a+b}\sqrt{b(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^4}}\right](-\operatorname{Cosh}[2c]+\operatorname{Sinh}[2c])+\sqrt{a+b}\operatorname{Sech}[c]\operatorname{Sech}[c+dx]\sqrt{b(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^4}\operatorname{Sinh}[dx]\right)\right)\Big/\left(2b\sqrt{a+b}\,d\,(a+b\operatorname{Sech}[c+dx]^2)\sqrt{b(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^4}\right)$$

Problem 81: Result more than twice size of optimal antiderivative.

$$\int\frac{\operatorname{Sech}[c+dx]^5}{a+b\operatorname{Sech}[c+dx]^2}\,dx$$

Optimal (type 3, 86 leaves, 5 steps):

$$-\frac{(2a-b)\operatorname{ArcTan}[\operatorname{Sinh}[c+dx]]}{2b^2d}+\frac{a^{3/2}\operatorname{ArcTan}\left[\frac{\sqrt{a}\operatorname{Sinh}[c+dx]}{\sqrt{a+b}}\right]}{b^2\sqrt{a+b}\,d}+\frac{\operatorname{Sech}[c+dx]\operatorname{Tanh}[c+dx]}{2bd}$$

Result (type 3, 213 leaves):

$$\frac{1}{4b^2\sqrt{a+b}\,d\,(a+b\operatorname{Sech}[c+dx]^2)\sqrt{(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^2}}\operatorname{Cosh}[c](a+2b+a\operatorname{Cosh}[2(c+dx)])\operatorname{Sech}[c+dx]^2\left(b\sqrt{a+b}\operatorname{Sech}[c]^2\operatorname{Sech}[c+dx]^2\sqrt{(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^2}\operatorname{Sinh}[dx]+2a^{3/2}\operatorname{ArcTan}\left[\frac{\sqrt{a+b}\operatorname{Csch}[c+dx]\sqrt{(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^2}(\operatorname{Cosh}[c]+\operatorname{Sinh}[c])}{\sqrt{a}}\right](-1+\operatorname{Tanh}[c])-\sqrt{a+b}\operatorname{Sech}[c]\sqrt{(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^2}\left(2(2a-b)\operatorname{ArcTan}\left[\operatorname{Tanh}\left[\frac{1}{2}(c+dx)\right]\right]-b\operatorname{Sech}[c+dx]\operatorname{Tanh}[c]\right)\right)$$

Problem 82: Result more than twice size of optimal antiderivative.

$$\int\frac{\operatorname{Sech}[c+dx]^6}{a+b\operatorname{Sech}[c+dx]^2}\,dx$$

Optimal (type 3, 77 leaves, 4 steps):

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

Result (type 3, 214 leaves):

$$\Bigg((a+2b+a\operatorname{Cosh}[2(c+d x)])\operatorname{Sech}[c+d x]^2 \Bigg(3a^2\operatorname{ArcTanh}\left[\frac{\operatorname{Sech}[d x](\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c])((a+2b)\operatorname{Sinh}[d x]-a\operatorname{Sinh}[2c+d x])}{2\sqrt{a+b}\sqrt{b(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^4}}\right](\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c])+\sqrt{a+b}\operatorname{Sech}[c+d x]\sqrt{b(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^4}\left(\operatorname{Sech}[c]\left(-3a+2b+b\operatorname{Sech}[c+d x]^2\right)\operatorname{Sinh}[d x]+b\operatorname{Sech}[c+d x]\operatorname{Tanh}[c]\right)\Bigg)\Bigg)\Big/\left(6b^2\sqrt{a+b}\,d\left(a+b\operatorname{Sech}[c+d x]^2\right)\sqrt{b(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^4}\right)$$

Problem 85: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 234 leaves):

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

Problem 87: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 74 leaves, 3 steps):

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

Result (type 3, 187 leaves):

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

Problem 88: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 150 leaves):

$$\left(\left(a+2b+a\,\text{Cosh}[2(c+d x)]\right)\text{Sech}[c+d x]^3\right.$$
$$\left(\left(\text{ArcTan}\left[\frac{\sqrt{a+b}\,\text{Csch}[c+d x]\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,(\text{Cosh}[c]+\text{Sinh}[c])}{\sqrt{a}}\right](a+2b+a\,\text{Cosh}[2(c+d x)])\,\text{Sech}[c+d x]\right.\right.$$
$$\left.\left.(-\text{Cosh}[c]+\text{Sinh}[c])\right)\Big/\left(\sqrt{a}\sqrt{a+b}\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}+2\,\text{Tanh}[c+d x]\right)\right)\Big/\left(8(a+b)\,d\left(a+b\,\text{Sech}[c+d x]^2\right)^2\right)$$

Problem 90: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 101 leaves, 5 steps):

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

Result (type 3, 282 leaves):

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

Problem 91: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 101 leaves, 5 steps):

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

Result (type 3, 483 leaves):

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

Problem 92: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sech}[c+dx]^7}{\left(a+b\,\text{Sech}[c+dx]^2\right)^2}\,dx$$

Optimal (type 3, 153 leaves, 6 steps):

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

Result (type 3, 1144 leaves):

$$-\frac{(4a-b)\,\text{ArcTan}\left[\text{Tanh}\left[\frac{c}{2}+\frac{dx}{2}\right]\right]\,(a+2b+a\,\text{Cosh}[2c+2dx])^2\,\text{Sech}[c+dx]^4}{4\,b^3\,d\,\left(a+b\,\text{Sech}[c+dx]^2\right)^2}+$$

$$\frac{\operatorname{Cosh}\left[\frac{c}{2}\right]\left(a+2b+a\operatorname{Cosh}[2c+2dx]\right)^2\operatorname{Sech}[c]\operatorname{Sech}[c+dx]^5\operatorname{Sinh}\left[\frac{c}{2}\right]}{4b^2d\left(a+b\operatorname{Sech}[c+dx]^2\right)^2}+\Bigg(\left(4a^3+5a^2b\right)\left(a+2b+a\operatorname{Cosh}[2c+2dx]\right)^2$$

$$\operatorname{Sech}[c+dx]^4\left(-\frac{\operatorname{ArcTan}\left[\operatorname{Csch}[c+dx]\left(\frac{\sqrt{a+b}\operatorname{Cosh}[c]\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}{\sqrt{a}}+\frac{\sqrt{a+b}\operatorname{Sinh}[c]\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}{\sqrt{a}}\right)\right]\operatorname{Cosh}[c]}{16\sqrt{a}\,b^3\sqrt{a+b}\,d\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}+\right.$$

$$\left.\frac{\operatorname{ArcTan}\left[\operatorname{Csch}[c+dx]\left(\frac{\sqrt{a+b}\operatorname{Cosh}[c]\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}{\sqrt{a}}+\frac{\sqrt{a+b}\operatorname{Sinh}[c]\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}{\sqrt{a}}\right)\right]\operatorname{Sinh}[c]}{16\sqrt{a}\,b^3\sqrt{a+b}\,d\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}\right)\Bigg)\Big/$$

$$\left((a+b)\left(a+b\operatorname{Sech}[c+dx]^2\right)^2\right)+\Bigg(\left(4a+5b\right)\left(a+2b+a\operatorname{Cosh}[2c+2dx]\right)^2\operatorname{Sech}[c+dx]^4$$

$$\left(-\frac{a^{3/2}\operatorname{ArcTan}\left[\operatorname{Csch}[c+dx]\left(\frac{\sqrt{a+b}\operatorname{Cosh}[c]\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}{\sqrt{a}}+\frac{\sqrt{a+b}\operatorname{Sinh}[c]\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}{\sqrt{a}}\right)\right]\operatorname{Cosh}[c]}{16b^3\sqrt{a+b}\,d\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}+\right.$$

$$\left.\frac{a^{3/2}\operatorname{ArcTan}\left[\operatorname{Csch}[c+dx]\left(\frac{\sqrt{a+b}\operatorname{Cosh}[c]\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}{\sqrt{a}}+\frac{\sqrt{a+b}\operatorname{Sinh}[c]\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}{\sqrt{a}}\right)\right]\operatorname{Sinh}[c]}{16b^3\sqrt{a+b}\,d\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}\right)\Bigg)\Big/$$

$$\left((a+b)\left(a+b\operatorname{Sech}[c+dx]^2\right)^2\right)+\Bigg(\left(4a^3+5a^2b\right)\left(a+2b+a\operatorname{Cosh}[2c+2dx]\right)^2\operatorname{Sech}[c+dx]^4$$

$$\left(\frac{i\operatorname{Cosh}[c]\operatorname{Log}[a+2b+a\operatorname{Cosh}[2c+2dx]]}{32\sqrt{a}\,b^3\sqrt{a+b}\,d\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}-\frac{i\operatorname{Log}[a+2b+a\operatorname{Cosh}[2c+2dx]]\operatorname{Sinh}[c]}{32\sqrt{a}\,b^3\sqrt{a+b}\,d\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}\right)\Bigg)\Big/$$

$$\left((a+b)\left(a+b\operatorname{Sech}[c+dx]^2\right)^2\right)+\Bigg(\left(4a+5b\right)\left(a+2b+a\operatorname{Cosh}[2c+2dx]\right)^2\operatorname{Sech}[c+dx]^4$$

$$\left(-\frac{i\,a^{3/2}\operatorname{Cosh}[c]\operatorname{Log}[a+2b+a\operatorname{Cosh}[2c+2dx]]}{32b^3\sqrt{a+b}\,d\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}+\frac{i\,a^{3/2}\operatorname{Log}[a+2b+a\operatorname{Cosh}[2c+2dx]]\operatorname{Sinh}[c]}{32b^3\sqrt{a+b}\,d\sqrt{\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c]}}\right)\Bigg)\Big/$$

$$\left((a+b)\left(a+b\,\text{Sech}[c+d\,x]^2\right)^2\right)+\frac{(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])^2\,\text{Sech}[c]\,\text{Sech}[c+d\,x]^6\,\text{Sinh}[d\,x]}{8\,b^2\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^2}+\frac{a^2\,(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])\,\text{Sech}[c+d\,x]^3\,\text{Tanh}[c+d\,x]}{4\,b^2\,(a+b)\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^2}$$

Problem 96: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 258 leaves):

$$\Bigg((a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)])\,\text{Sech}[c+d\,x]^6$$

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

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

$$\frac{(a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)])\,\text{Sech}[2\,c]\,\left(\left(5\,a^2+16\,a\,b+8\,b^2\right)\,\text{Sinh}[2\,c]-a\,(5\,a+2\,b)\,\text{Sinh}[2\,d\,x]\right)}{a^2}\Bigg)\Bigg)\Bigg/\left(64\,(a+b)^2\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3\right)$$

Problem 98: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 507 leaves):

$$\Bigg((a+4b)\,(a+2b+a\,\text{Cosh}[2c+2dx])^3\,\text{Sech}[c+dx]^6 \Bigg(-\Bigg(\Bigg(\mathrm{i}\,\text{ArcTan}\Big[\text{Sech}[dx]\left(-\frac{\mathrm{i}\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{\mathrm{i}\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)$$
$$(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx])\Big]\,\text{Cosh}[2c]\Bigg)\Bigg/\left(64\,b\sqrt{a+b}\;d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\Bigg)+$$
$$\Bigg(\mathrm{i}\,\text{ArcTan}\Big[\text{Sech}[dx]\left(-\frac{\mathrm{i}\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{\mathrm{i}\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)$$
$$(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx])\Big]\,\text{Sinh}[2c]\Bigg)\Bigg/\left(64\,b\sqrt{a+b}\;d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\Bigg)\Bigg)\Bigg/$$
$$\left((a+b)^2\left(a+b\,\text{Sech}[c+dx]^2\right)^3\right)+\frac{(a+2b+a\,\text{Cosh}[2c+2dx])\,\text{Sech}[2c]\,\text{Sech}[c+dx]^6\,(-a\,\text{Sinh}[2c]-2b\,\text{Sinh}[2c]+a\,\text{Sinh}[2dx])}{16\,a\,(a+b)\,d\left(a+b\,\text{Sech}[c+dx]^2\right)^3}+$$
$$\Big((a+2b+a\,\text{Cosh}[2c+2dx])^2\,\text{Sech}[2c]\,\text{Sech}[c+dx]^6$$
$$(a\,\text{Sinh}[2c]+4b\,\text{Sinh}[2c]-a\,\text{Sinh}[2dx]+2b\,\text{Sinh}[2dx])\Big)\Big/\left(64\,b\,(a+b)^2\,d\left(a+b\,\text{Sech}[c+dx]^2\right)^3\right)$$

Problem 101: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sech}[c+dx]^7}{\left(a+b\,\text{Sech}[c+dx]^2\right)^3}\,dx$$

Optimal (type 3, 153 leaves, 6 steps):

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

Result (type 3, 1120 leaves):

$$\frac{\text{ArcTan}\left[\text{Tanh}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^3\,\text{Sech}[c+d\,x]^6}{4\,b^3\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3}+\Bigg(\left(8\,a^3+20\,a^2\,b+15\,a\,b^2\right)\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^3$$

$$\text{Sech}[c+d\,x]^6\left(\frac{\text{ArcTan}\left[\text{Csch}[c+d\,x]\left(\frac{\sqrt{a+b}\,\text{Cosh}[c]\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}{\sqrt{a}}+\frac{\sqrt{a+b}\,\text{Sinh}[c]\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}{\sqrt{a}}\right)\right]\text{Cosh}[c]}{128\,\sqrt{a}\,b^3\,\sqrt{a+b}\,d\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}-\right.$$

$$\left.\frac{\text{ArcTan}\left[\text{Csch}[c+d\,x]\left(\frac{\sqrt{a+b}\,\text{Cosh}[c]\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}{\sqrt{a}}+\frac{\sqrt{a+b}\,\text{Sinh}[c]\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}{\sqrt{a}}\right)\right]\text{Sinh}[c]}{128\,\sqrt{a}\,b^3\,\sqrt{a+b}\,d\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}\right)\Bigg)\Big/$$

$$\left(\left(a+b\right)^2\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3\right)+\Bigg(\left(8\,a^2+20\,a\,b+15\,b^2\right)\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^3\,\text{Sech}[c+d\,x]^6$$

$$\left(\frac{\sqrt{a}\,\text{ArcTan}\left[\text{Csch}[c+d\,x]\left(\frac{\sqrt{a+b}\,\text{Cosh}[c]\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}{\sqrt{a}}+\frac{\sqrt{a+b}\,\text{Sinh}[c]\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}{\sqrt{a}}\right)\right]\text{Cosh}[c]}{128\,b^3\,\sqrt{a+b}\,d\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}-\right.$$

$$\left.\frac{\sqrt{a}\,\text{ArcTan}\left[\text{Csch}[c+d\,x]\left(\frac{\sqrt{a+b}\,\text{Cosh}[c]\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}{\sqrt{a}}+\frac{\sqrt{a+b}\,\text{Sinh}[c]\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}{\sqrt{a}}\right)\right]\text{Sinh}[c]}{128\,b^3\,\sqrt{a+b}\,d\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}\right)\Bigg)\Big/$$

$$\left(\left(a+b\right)^2\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3\right)+\Bigg(\left(8\,a^3+20\,a^2\,b+15\,a\,b^2\right)\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^3\,\text{Sech}[c+d\,x]^6$$

$$\left(-\frac{i\,\text{Cosh}[c]\,\text{Log}[a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]]}{256\,\sqrt{a}\,b^3\,\sqrt{a+b}\,d\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}+\frac{i\,\text{Log}[a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]]\,\text{Sinh}[c]}{256\,\sqrt{a}\,b^3\,\sqrt{a+b}\,d\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}\right)\Bigg)\Big/$$

$$\left(\left(a+b\right)^2\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3\right)+\Bigg(\left(8\,a^2+20\,a\,b+15\,b^2\right)\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^3\,\text{Sech}[c+d\,x]^6$$

$$\left(\frac{i\,\sqrt{a}\,\text{Cosh}[c]\,\text{Log}[a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]]}{256\,b^3\,\sqrt{a+b}\,d\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}-\frac{i\,\sqrt{a}\,\text{Log}[a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]]\,\text{Sinh}[c]}{256\,b^3\,\sqrt{a+b}\,d\,\sqrt{\text{Cosh}[2\,c]-\text{Sinh}[2\,c]}}\right)\Bigg)\Big/\left(\left(a+b\right)^2\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3\right)+$$

$$\frac{(a+2b+a\,\text{Cosh}[2c+2dx])^2\,\text{Sech}[c+dx]^6\,(-4a^2\,\text{Sinh}[c+dx]-7ab\,\text{Sinh}[c+dx])}{32b^2\,(a+b)^2\,d\,(a+b\,\text{Sech}[c+dx]^2)^3}-$$
$$\frac{a\,(a+2b+a\,\text{Cosh}[2c+2dx])\,\text{Sech}[c+dx]^5\,\text{Tanh}[c+dx]}{8b\,(a+b)\,d\,(a+b\,\text{Sech}[c+dx]^2)^3}$$

Problem 112: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sech}[c+dx]^2)^2\,\text{Tanh}[c+dx]^4\,dx$$

Optimal (type 3, 77 leaves, 4 steps):

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

Result (type 3, 395 leaves):

$$\frac{1}{13440\,d}\text{Sech}[c]\,\text{Sech}[c+dx]^7$$
$$(3675a^2 dx\,\text{Cosh}[dx]+3675a^2 dx\,\text{Cosh}[2c+dx]+2205a^2 dx\,\text{Cosh}[2c+3dx]+2205a^2 dx\,\text{Cosh}[4c+3dx]+735a^2 dx\,\text{Cosh}[4c+5dx]+$$
$$735a^2 dx\,\text{Cosh}[6c+5dx]+105a^2 dx\,\text{Cosh}[6c+7dx]+105a^2 dx\,\text{Cosh}[8c+7dx]-5320a^2\,\text{Sinh}[dx]+1680ab\,\text{Sinh}[dx]+$$
$$840b^2\,\text{Sinh}[dx]+4480a^2\,\text{Sinh}[2c+dx]-1260ab\,\text{Sinh}[2c+dx]+420b^2\,\text{Sinh}[2c+dx]-3780a^2\,\text{Sinh}[2c+3dx]+$$
$$924ab\,\text{Sinh}[2c+3dx]-168b^2\,\text{Sinh}[2c+3dx]+2100a^2\,\text{Sinh}[4c+3dx]-840ab\,\text{Sinh}[4c+3dx]-$$
$$420b^2\,\text{Sinh}[4c+3dx]-1540a^2\,\text{Sinh}[4c+5dx]+168ab\,\text{Sinh}[4c+5dx]+84b^2\,\text{Sinh}[4c+5dx]+$$
$$420a^2\,\text{Sinh}[6c+5dx]-420ab\,\text{Sinh}[6c+5dx]-280a^2\,\text{Sinh}[6c+7dx]+84ab\,\text{Sinh}[6c+7dx]+12b^2\,\text{Sinh}[6c+7dx])$$

Problem 114: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sech}[c+dx]^2)^2\,\text{Tanh}[c+dx]^2\,dx$$

Optimal (type 3, 59 leaves, 4 steps):

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

Result (type 3, 281 leaves):

$$\frac{1}{480\,d}\text{Sech}[c]\,\text{Sech}[c+d\,x]^5$$
$$\big(150\,a^2\,d\,x\,\text{Cosh}[d\,x]+150\,a^2\,d\,x\,\text{Cosh}[2\,c+d\,x]+75\,a^2\,d\,x\,\text{Cosh}[2\,c+3\,d\,x]+75\,a^2\,d\,x\,\text{Cosh}[4\,c+3\,d\,x]+15\,a^2\,d\,x\,\text{Cosh}[4\,c+5\,d\,x]+$$
$$15\,a^2\,d\,x\,\text{Cosh}[6\,c+5\,d\,x]-180\,a^2\,\text{Sinh}[d\,x]+80\,a\,b\,\text{Sinh}[d\,x]-20\,b^2\,\text{Sinh}[d\,x]+120\,a^2\,\text{Sinh}[2\,c+d\,x]-120\,a\,b\,\text{Sinh}[2\,c+d\,x]-$$
$$60\,b^2\,\text{Sinh}[2\,c+d\,x]-120\,a^2\,\text{Sinh}[2\,c+3\,d\,x]+40\,a\,b\,\text{Sinh}[2\,c+3\,d\,x]+20\,b^2\,\text{Sinh}[2\,c+3\,d\,x]+$$
$$30\,a^2\,\text{Sinh}[4\,c+3\,d\,x]-60\,a\,b\,\text{Sinh}[4\,c+3\,d\,x]-30\,a^2\,\text{Sinh}[4\,c+5\,d\,x]+20\,a\,b\,\text{Sinh}[4\,c+5\,d\,x]+4\,b^2\,\text{Sinh}[4\,c+5\,d\,x]\big)$$

Problem 116: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 106 leaves):

$$\Big(4\,\big(b+a\,\text{Cosh}[c+d\,x]^2\big)^2\,\text{Sech}[c+d\,x]^3$$
$$\big(3\,a^2\,d\,x\,\text{Cosh}[c+d\,x]^3+b^2\,\text{Sech}[c]\,\text{Sinh}[d\,x]+2\,b\,(3\,a+b)\,\text{Cosh}[c+d\,x]^2\,\text{Sech}[c]\,\text{Sinh}[d\,x]+b^2\,\text{Cosh}[c+d\,x]\,\text{Tanh}[c]\big)\Big)\Big/\Big(3$$
$$d\,\big(a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)]\big)^2\Big)$$

Problem 118: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 82 leaves):

$$\Big(4\,\big(b+a\,\text{Cosh}[c+d\,x]^2\big)^2\,\text{Sech}[c+d\,x]\,\Big(a^2\,d\,x\,\text{Cosh}[c+d\,x]+\Big((a+b)^2\,\text{Coth}[c+d\,x]\,\text{Csch}[c]-b^2\,\text{Sech}[c]\Big)\,\text{Sinh}[d\,x]\Big)\Big)\Big/$$
$$\Big(d\,\big(a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)]\big)^2\Big)$$

Problem 120: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 46 leaves, 4 steps):

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

Result (type 3, 160 leaves):

$$\frac{1}{24 d} \text{Csch}[c]\, \text{Csch}[c + d x]^3 \left(9 a^2 d x \text{Cosh}[d x] - 9 a^2 d x \text{Cosh}[2 c + d x] - 3 a^2 d x \text{Cosh}[2 c + 3 d x] + 3 a^2 d x \text{Cosh}[4 c + 3 d x] - 12 a^2 \text{Sinh}[d x] + 12 b^2 \text{Sinh}[d x] - 12 a^2 \text{Sinh}[2 c + d x] - 12 a b \text{Sinh}[2 c + d x] + 8 a^2 \text{Sinh}[2 c + 3 d x] + 4 a b \text{Sinh}[2 c + 3 d x] - 4 b^2 \text{Sinh}[2 c + 3 d x]\right)$$

Problem 122: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 256 leaves):

$$\frac{1}{480 d} \text{Csch}[c]\, \text{Csch}[c + d x]^5 \left(-150 a^2 d x \text{Cosh}[d x] + 150 a^2 d x \text{Cosh}[2 c + d x] + 75 a^2 d x \text{Cosh}[2 c + 3 d x] - 75 a^2 d x \text{Cosh}[4 c + 3 d x] - 15 a^2 d x \text{Cosh}[4 c + 5 d x] + 15 a^2 d x \text{Cosh}[6 c + 5 d x] + 280 a^2 \text{Sinh}[d x] + 120 a b \text{Sinh}[d x] + 20 b^2 \text{Sinh}[d x] + 180 a^2 \text{Sinh}[2 c + d x] - 60 b^2 \text{Sinh}[2 c + d x] - 140 a^2 \text{Sinh}[2 c + 3 d x] + 20 b^2 \text{Sinh}[2 c + 3 d x] - 90 a^2 \text{Sinh}[4 c + 3 d x] - 60 a b \text{Sinh}[4 c + 3 d x] + 46 a^2 \text{Sinh}[4 c + 5 d x] + 12 a b \text{Sinh}[4 c + 5 d x] - 4 b^2 \text{Sinh}[4 c + 5 d x]\right)$$

Problem 124: Result more than twice size of optimal antiderivative.

$$\int \left(a + b \text{Sech}[c + d x]^2\right)^3 \text{Tanh}[c + d x]^4 dx$$

Optimal (type 3, 110 leaves, 4 steps):

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

Result (type 3, 683 leaves):

$$\frac{8 a^3 x \operatorname{Cosh}[c+d x]^6 \left(a+b \operatorname{Sech}[c+d x]^2\right)^3}{\left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3}+\frac{8 \operatorname{Sech}[c] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(27 a b^2 \operatorname{Sinh}[c]-10 b^3 \operatorname{Sinh}[c]\right)}{63 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3}+$$

$$\frac{8 \operatorname{Cosh}[c+d x]^2 \operatorname{Sech}[c] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(63 a^2 b \operatorname{Sinh}[c]-72 a b^2 \operatorname{Sinh}[c]+b^3 \operatorname{Sinh}[c]\right)}{105 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3}+$$

$$\left(8 \operatorname{Cosh}[c+d x]^4 \operatorname{Sech}[c] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(105 a^3 \operatorname{Sinh}[c]-378 a^2 b \operatorname{Sinh}[c]+27 a b^2 \operatorname{Sinh}[c]+4 b^3 \operatorname{Sinh}[c]\right)\right) \Big/$$

$$\left(315 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3\right)+\frac{8 b^3 \operatorname{Sech}[c] \operatorname{Sech}[c+d x]^3 \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \operatorname{Sinh}[d x]}{9 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3}+$$

$$\frac{8 \operatorname{Sech}[c] \operatorname{Sech}[c+d x] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(27 a b^2 \operatorname{Sinh}[d x]-10 b^3 \operatorname{Sinh}[d x]\right)}{63 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3}-$$

$$\left(8 \operatorname{Cosh}[c+d x]^5 \operatorname{Sech}[c] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(420 a^3 \operatorname{Sinh}[d x]-189 a^2 b \operatorname{Sinh}[d x]-54 a b^2 \operatorname{Sinh}[d x]-8 b^3 \operatorname{Sinh}[d x]\right)\right) \Big/$$

$$\left(315 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3\right)+\frac{8 \operatorname{Cosh}[c+d x] \operatorname{Sech}[c] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(63 a^2 b \operatorname{Sinh}[d x]-72 a b^2 \operatorname{Sinh}[d x]+b^3 \operatorname{Sinh}[d x]\right)}{105 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3}+$$

$$\left(8 \operatorname{Cosh}[c+d x]^3 \operatorname{Sech}[c] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(105 a^3 \operatorname{Sinh}[d x]-378 a^2 b \operatorname{Sinh}[d x]+27 a b^2 \operatorname{Sinh}[d x]+4 b^3 \operatorname{Sinh}[d x]\right)\right) \Big/$$

$$\left(315 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3\right)+\frac{8 b^3 \operatorname{Sech}[c+d x]^2 \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \operatorname{Tanh}[c]}{9 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3}$$

Problem 126: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 92 leaves, 4 steps):

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

Result (type 3, 479 leaves):

$$\frac{1}{13440 d} \operatorname{Sech}[c] \operatorname{Sech}[c+d x]^7$$

$$\left(3675 a^3 d x \operatorname{Cosh}[d x]+3675 a^3 d x \operatorname{Cosh}[2 c+d x]+2205 a^3 d x \operatorname{Cosh}[2 c+3 d x]+2205 a^3 d x \operatorname{Cosh}[4 c+3 d x]+735 a^3 d x \operatorname{Cosh}[4 c+5 d x]+\right.$$

$$735 a^3 d x \operatorname{Cosh}[6 c+5 d x]+105 a^3 d x \operatorname{Cosh}[6 c+7 d x]+105 a^3 d x \operatorname{Cosh}[8 c+7 d x]-4200 a^3 \operatorname{Sinh}[d x]+3360 a^2 b \operatorname{Sinh}[d x]+$$

$$840 a b^2 \operatorname{Sinh}[d x]-560 b^3 \operatorname{Sinh}[d x]+3150 a^3 \operatorname{Sinh}[2 c+d x]-3990 a^2 b \operatorname{Sinh}[2 c+d x]-2100 a b^2 \operatorname{Sinh}[2 c+d x]-$$

$$1120 b^3 \operatorname{Sinh}[2 c+d x]-3150 a^3 \operatorname{Sinh}[2 c+3 d x]+1890 a^2 b \operatorname{Sinh}[2 c+3 d x]+504 a b^2 \operatorname{Sinh}[2 c+3 d x]+$$

$$336 b^3 \operatorname{Sinh}[2 c+3 d x]+1260 a^3 \operatorname{Sinh}[4 c+3 d x]-2520 a^2 b \operatorname{Sinh}[4 c+3 d x]-1260 a b^2 \operatorname{Sinh}[4 c+3 d x]-$$

$$1260 a^3 \operatorname{Sinh}[4 c+5 d x]+840 a^2 b \operatorname{Sinh}[4 c+5 d x]+588 a b^2 \operatorname{Sinh}[4 c+5 d x]+112 b^3 \operatorname{Sinh}[4 c+5 d x]+210 a^3 \operatorname{Sinh}[6 c+5 d x]-$$

$$\left.630 a^2 b \operatorname{Sinh}[6 c+5 d x]-210 a^3 \operatorname{Sinh}[6 c+7 d x]+210 a^2 b \operatorname{Sinh}[6 c+7 d x]+84 a b^2 \operatorname{Sinh}[6 c+7 d x]+16 b^3 \operatorname{Sinh}[6 c+7 d x]\right)$$

Problem 128: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 73 leaves, 4 steps):

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

Result (type 3, 268 leaves):

$$\frac{1}{480 d}\,\text{Sech}[c]\,\text{Sech}[c + d\,x]^5 \Big(150 a^3 d\,x\,\text{Cosh}[d\,x] + 150 a^3 d\,x\,\text{Cosh}[2 c + d\,x] + 75 a^3 d\,x\,\text{Cosh}[2 c + 3 d\,x] + 75 a^3 d\,x\,\text{Cosh}[4 c + 3 d\,x] + 15 a^3 d\,x\,\text{Cosh}[4 c + 5 d\,x] + 15 a^3 d\,x\,\text{Cosh}[6 c + 5 d\,x] + 540 a^2 b\,\text{Sinh}[d\,x] + 420 a b^2\,\text{Sinh}[d\,x] + 160 b^3\,\text{Sinh}[d\,x] - 360 a^2 b\,\text{Sinh}[2 c + d\,x] - 180 a b^2\,\text{Sinh}[2 c + d\,x] + 360 a^2 b\,\text{Sinh}[2 c + 3 d\,x] + 300 a b^2\,\text{Sinh}[2 c + 3 d\,x] + 80 b^3\,\text{Sinh}[2 c + 3 d\,x] - 90 a^2 b\,\text{Sinh}[4 c + 3 d\,x] + 90 a^2 b\,\text{Sinh}[4 c + 5 d\,x] + 60 a b^2\,\text{Sinh}[4 c + 5 d\,x] + 16 b^3\,\text{Sinh}[4 c + 5 d\,x]\Big)$$

Problem 130: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 61 leaves, 4 steps):

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

Result (type 3, 126 leaves):

$$\Big(8 \left(a\,\text{Cosh}[c + d\,x] + b\,\text{Sech}[c + d\,x]\right)^3 \Big(3 a^3 d\,x\,\text{Cosh}[c + d\,x]^3 - b^3\,\text{Sech}[c]\,\text{Sinh}[d\,x] + \text{Cosh}[c + d\,x]^2 \left(3 \left(a + b\right)^3 \text{Coth}[c + d\,x]\,\text{Csch}[c] - b^2 \left(9 a + 5 b\right) \text{Sech}[c]\right) \text{Sinh}[d\,x] - b^3\,\text{Cosh}[c + d\,x]\,\text{Tanh}[c]\Big)\Big) \Big/ \Big(3 d \left(a + 2 b + a\,\text{Cosh}\left[2 \left(c + d\,x\right)\right]\right)^3\Big)$$

Problem 131: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 81 leaves, 4 steps):

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

Result (type 3, 174 leaves) :

$$-\frac{1}{2\,d}\,\text{Csch}[2\,(c+d\,x)]^2\,\Big(2\,a^3+6\,a^2\,b+6\,a\,b^2+2\,(a^3+3\,a^2\,b+3\,a\,b^2+2\,b^3)\,\text{Cosh}[2\,(c+d\,x)]+3\,a\,b^2\,\text{Log}[\text{Cosh}[c+d\,x]]+2\,b^3\,\text{Log}[\text{Cosh}[c+d\,x]]+a^3\,\text{Log}[\text{Sinh}[c+d\,x]]-3\,a\,b^2\,\text{Log}[\text{Sinh}[c+d\,x]]-2\,b^3\,\text{Log}[\text{Sinh}[c+d\,x]]-\text{Cosh}[4\,(c+d\,x)]\,\big(b^2\,(3\,a+2\,b)\,\text{Log}[\text{Cosh}[c+d\,x]]+(a-2\,b)\,(a+b)^2\,\text{Log}[\text{Sinh}[c+d\,x]]\big)\Big)$$

Problem 132: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 343 leaves) :

$$\frac{1}{96\,d}\,\text{Csch}[c]\,\text{Csch}[c+d\,x]^3\,\text{Sech}[c]\,\text{Sech}[c+d\,x]\,\big(6\,a^3\,d\,x\,\text{Cosh}[2\,d\,x]-3\,a^3\,d\,x\,\text{Cosh}[2\,(c+2\,d\,x)]-6\,a^3\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+3\,a^3\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]-18\,a^2\,b\,\text{Sinh}[2\,c]-36\,a\,b^2\,\text{Sinh}[2\,c]-4\,a^3\,\text{Sinh}[2\,d\,x]+6\,a^2\,b\,\text{Sinh}[2\,d\,x]+24\,a\,b^2\,\text{Sinh}[2\,d\,x]+32\,b^3\,\text{Sinh}[2\,d\,x]-16\,a^3\,\text{Sinh}[2\,(c+d\,x)]-12\,a^2\,b\,\text{Sinh}[2\,(c+d\,x)]+24\,a\,b^2\,\text{Sinh}[2\,(c+d\,x)]+8\,b^3\,\text{Sinh}[2\,(c+d\,x)]+8\,a^3\,\text{Sinh}[4\,(c+d\,x)]+6\,a^2\,b\,\text{Sinh}[4\,(c+d\,x)]-12\,a\,b^2\,\text{Sinh}[4\,(c+d\,x)]-4\,b^3\,\text{Sinh}[4\,(c+d\,x)]+8\,a^3\,\text{Sinh}[2\,(c+2\,d\,x)]+6\,a^2\,b\,\text{Sinh}[2\,(c+2\,d\,x)]-12\,a\,b^2\,\text{Sinh}[2\,(c+2\,d\,x)]-16\,b^3\,\text{Sinh}[2\,(c+2\,d\,x)]-12\,a^3\,\text{Sinh}[4\,c+2\,d\,x]-18\,a^2\,b\,\text{Sinh}[4\,c+2\,d\,x]\big)$$

Problem 134: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 69 leaves, 4 steps) :

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

Result (type 3, 303 leaves) :

$$\frac{1}{480\,d}\,\mathrm{Csch}[c]\,\mathrm{Csch}[c+d\,x]^5\,\big(-150\,a^3\,d\,x\,\mathrm{Cosh}[d\,x]+150\,a^3\,d\,x\,\mathrm{Cosh}[2\,c+d\,x]+75\,a^3\,d\,x\,\mathrm{Cosh}[2\,c+3\,d\,x]-75\,a^3\,d\,x\,\mathrm{Cosh}[4\,c+3\,d\,x]-15\,a^3\,d\,x\,\mathrm{Cosh}[4\,c+5\,d\,x]+15\,a^3\,d\,x\,\mathrm{Cosh}[6\,c+5\,d\,x]+280\,a^3\,\mathrm{Sinh}[d\,x]+180\,a^2\,b\,\mathrm{Sinh}[d\,x]+60\,a\,b^2\,\mathrm{Sinh}[d\,x]+160\,b^3\,\mathrm{Sinh}[d\,x]+180\,a^3\,\mathrm{Sinh}[2\,c+d\,x]-180\,a\,b^2\,\mathrm{Sinh}[2\,c+d\,x]-140\,a^3\,\mathrm{Sinh}[2\,c+3\,d\,x]+60\,a\,b^2\,\mathrm{Sinh}[2\,c+3\,d\,x]-80\,b^3\,\mathrm{Sinh}[2\,c+3\,d\,x]-90\,a^3\,\mathrm{Sinh}[4\,c+3\,d\,x]-90\,a^2\,b\,\mathrm{Sinh}[4\,c+3\,d\,x]+46\,a^3\,\mathrm{Sinh}[4\,c+5\,d\,x]+18\,a^2\,b\,\mathrm{Sinh}[4\,c+5\,d\,x]-12\,a\,b^2\,\mathrm{Sinh}[4\,c+5\,d\,x]+16\,b^3\,\mathrm{Sinh}[4\,c+5\,d\,x]\big)$$

Problem 136: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 111 leaves, 4 steps):

$$a^4\,x+\frac{b\,(2\,a+b)\,\left(2\,a^2+2\,a\,b+b^2\right)\,\mathrm{Tanh}[c+d\,x]}{d}-\frac{b^2\,\left(6\,a^2+8\,a\,b+3\,b^2\right)\,\mathrm{Tanh}[c+d\,x]^3}{3\,d}+\frac{b^3\,(4\,a+3\,b)\,\mathrm{Tanh}[c+d\,x]^5}{5\,d}-\frac{b^4\,\mathrm{Tanh}[c+d\,x]^7}{7\,d}$$

Result (type 3, 455 leaves):

$$\frac{1}{13\,440\,d}\,\mathrm{Sech}[c]\,\mathrm{Sech}[c+d\,x]^7\,\big(3675\,a^4\,d\,x\,\mathrm{Cosh}[d\,x]+3675\,a^4\,d\,x\,\mathrm{Cosh}[2\,c+d\,x]+2205\,a^4\,d\,x\,\mathrm{Cosh}[2\,c+3\,d\,x]+2205\,a^4\,d\,x\,\mathrm{Cosh}[4\,c+3\,d\,x]+735\,a^4\,d\,x\,\mathrm{Cosh}[4\,c+5\,d\,x]+735\,a^4\,d\,x\,\mathrm{Cosh}[6\,c+5\,d\,x]+105\,a^4\,d\,x\,\mathrm{Cosh}[6\,c+7\,d\,x]+105\,a^4\,d\,x\,\mathrm{Cosh}[8\,c+7\,d\,x]+16\,800\,a^3\,b\,\mathrm{Sinh}[d\,x]+18\,480\,a^2\,b^2\,\mathrm{Sinh}[d\,x]+11\,200\,a\,b^3\,\mathrm{Sinh}[d\,x]+3360\,b^4\,\mathrm{Sinh}[d\,x]-12\,600\,a^3\,b\,\mathrm{Sinh}[2\,c+d\,x]-10\,920\,a^2\,b^2\,\mathrm{Sinh}[2\,c+d\,x]-4480\,a\,b^3\,\mathrm{Sinh}[2\,c+d\,x]+12\,600\,a^3\,b\,\mathrm{Sinh}[2\,c+3\,d\,x]+15\,120\,a^2\,b^2\,\mathrm{Sinh}[2\,c+3\,d\,x]+9408\,a\,b^3\,\mathrm{Sinh}[2\,c+3\,d\,x]+2016\,b^4\,\mathrm{Sinh}[2\,c+3\,d\,x]-5040\,a^3\,b\,\mathrm{Sinh}[4\,c+3\,d\,x]-2520\,a^2\,b^2\,\mathrm{Sinh}[4\,c+3\,d\,x]+5040\,a^3\,b\,\mathrm{Sinh}[4\,c+5\,d\,x]+5880\,a^2\,b^2\,\mathrm{Sinh}[4\,c+5\,d\,x]+3136\,a\,b^3\,\mathrm{Sinh}[4\,c+5\,d\,x]+672\,b^4\,\mathrm{Sinh}[4\,c+5\,d\,x]-840\,a^3\,b\,\mathrm{Sinh}[6\,c+5\,d\,x]+840\,a^3\,b\,\mathrm{Sinh}[6\,c+7\,d\,x]+840\,a^2\,b^2\,\mathrm{Sinh}[6\,c+7\,d\,x]+448\,a\,b^3\,\mathrm{Sinh}[6\,c+7\,d\,x]+96\,b^4\,\mathrm{Sinh}[6\,c+7\,d\,x]\big)$$

Problem 137: Result more than twice size of optimal antiderivative.

$$\int\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^5\,dx$$

Optimal (type 3, 163 leaves, 4 steps):

$$a^5\,x+\frac{b\,\left(5\,a^4+10\,a^3\,b+10\,a^2\,b^2+5\,a\,b^3+b^4\right)\,\mathrm{Tanh}[c+d\,x]}{d}-\frac{b^2\,\left(10\,a^3+20\,a^2\,b+15\,a\,b^2+4\,b^3\right)\,\mathrm{Tanh}[c+d\,x]^3}{3\,d}+\frac{b^3\,\left(10\,a^2+15\,a\,b+6\,b^2\right)\,\mathrm{Tanh}[c+d\,x]^5}{5\,d}-\frac{b^4\,(5\,a+4\,b)\,\mathrm{Tanh}[c+d\,x]^7}{7\,d}+\frac{b^5\,\mathrm{Tanh}[c+d\,x]^9}{9\,d}$$

Result (type 3, 724 leaves):

$$\frac{32\,a^5\,x\,\text{Cosh}[c+d\,x]^{10}\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^5}{\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^5}+\frac{32\,\text{Cosh}[c+d\,x]^4\,\text{Sech}[c]\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^5\,\left(45\,a\,b^4\,\text{Sinh}[c]+8\,b^5\,\text{Sinh}[c]\right)}{63\,d\,\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^5}+$$
$$\frac{64\,\text{Cosh}[c+d\,x]^6\,\text{Sech}[c]\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^5\,\left(105\,a^2\,b^3\,\text{Sinh}[c]+45\,a\,b^4\,\text{Sinh}[c]+8\,b^5\,\text{Sinh}[c]\right)}{105\,d\,\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^5}+$$
$$\left(64\,\text{Cosh}[c+d\,x]^8\,\text{Sech}[c]\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^5\,\left(525\,a^3\,b^2\,\text{Sinh}[c]+420\,a^2\,b^3\,\text{Sinh}[c]+180\,a\,b^4\,\text{Sinh}[c]+32\,b^5\,\text{Sinh}[c]\right)\right)\Big/$$
$$\left(315\,d\,\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^5\right)+\frac{32\,b^5\,\text{Cosh}[c+d\,x]\,\text{Sech}[c]\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^5\,\text{Sinh}[d\,x]}{9\,d\,\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^5}+$$
$$\frac{32\,\text{Cosh}[c+d\,x]^3\,\text{Sech}[c]\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^5\,\left(45\,a\,b^4\,\text{Sinh}[d\,x]+8\,b^5\,\text{Sinh}[d\,x]\right)}{63\,d\,\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^5}+$$
$$\left(64\,\text{Cosh}[c+d\,x]^5\,\text{Sech}[c]\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^5\,\left(105\,a^2\,b^3\,\text{Sinh}[d\,x]+45\,a\,b^4\,\text{Sinh}[d\,x]+8\,b^5\,\text{Sinh}[d\,x]\right)\right)\Big/\left(105\,d\,\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^5\right)+$$
$$\left(64\,\text{Cosh}[c+d\,x]^7\,\text{Sech}[c]\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^5\,\left(525\,a^3\,b^2\,\text{Sinh}[d\,x]+420\,a^2\,b^3\,\text{Sinh}[d\,x]+180\,a\,b^4\,\text{Sinh}[d\,x]+32\,b^5\,\text{Sinh}[d\,x]\right)\right)\Big/$$
$$\left(315\,d\,\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^5\right)+\left(32\,\text{Cosh}[c+d\,x]^9\,\text{Sech}[c]\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^5\right.$$
$$\left.\left(1575\,a^4\,b\,\text{Sinh}[d\,x]+2100\,a^3\,b^2\,\text{Sinh}[d\,x]+1680\,a^2\,b^3\,\text{Sinh}[d\,x]+720\,a\,b^4\,\text{Sinh}[d\,x]+128\,b^5\,\text{Sinh}[d\,x]\right)\right)\Big/$$
$$\left(315\,d\,\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^5\right)+\frac{32\,b^5\,\text{Cosh}[c+d\,x]^2\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^5\,\text{Tanh}[c]}{9\,d\,\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^5}$$

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

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

Optimal (type 3, 70 leaves, 4 steps):

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

Result (type 3, 180 leaves):

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

Problem 139: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 59 leaves, 6 steps):

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

Result (type 3, 196 leaves):

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

Problem 141: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 46 leaves, 5 steps):

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

Result (type 3, 174 leaves):

$$\left((a+2b+a\,\mathrm{Cosh}[2\,(c+d\,x)])\,\mathrm{Sech}[c+d\,x]^2\left(\sqrt{a+b}\;d\,x\,\sqrt{b\,(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^4}+(a+b)\,\mathrm{ArcTanh}\left[\frac{\mathrm{Sech}[d\,x]\,(\mathrm{Cosh}[2\,c]-\mathrm{Sinh}[2\,c])\,((a+2b)\,\mathrm{Sinh}[d\,x]-a\,\mathrm{Sinh}[2\,c+d\,x])}{2\sqrt{a+b}\,\sqrt{b\,(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^4}}\right](-\mathrm{Cosh}[2\,c]+\mathrm{Sinh}[2\,c])\right)\right)\Big/\left(2\,a\sqrt{a+b}\;d\,(a+b\,\mathrm{Sech}[c+d\,x]^2)\,\sqrt{b\,(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^4}\right)$$

Problem 143: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{a+b\,\mathrm{Sech}[c+d\,x]^2}\,dx$$

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

$$\frac{x}{a}-\frac{\sqrt{b}\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\mathrm{Tanh}[c+d\,x]}{\sqrt{a+b}}\right]}{a\sqrt{a+b}\;d}$$

Result (type 3, 172 leaves):

$$\left((a+2b+a\,\mathrm{Cosh}[2\,(c+d\,x)])\,\mathrm{Sech}[c+d\,x]^2\left(\sqrt{a+b}\;d\,x\,\sqrt{b\,(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^4}+b\,\mathrm{ArcTanh}\left[\frac{\mathrm{Sech}[d\,x]\,(\mathrm{Cosh}[2\,c]-\mathrm{Sinh}[2\,c])\,((a+2b)\,\mathrm{Sinh}[d\,x]-a\,\mathrm{Sinh}[2\,c+d\,x])}{2\sqrt{a+b}\,\sqrt{b\,(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^4}}\right](-\mathrm{Cosh}[2\,c]+\mathrm{Sinh}[2\,c])\right)\right)\Big/\left(2\,a\sqrt{a+b}\;d\,(a+b\,\mathrm{Sech}[c+d\,x]^2)\,\sqrt{b\,(\mathrm{Cosh}[c]-\mathrm{Sinh}[c])^4}\right)$$

Problem 145: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Coth}[c+d\,x]^2}{a+b\,\mathrm{Sech}[c+d\,x]^2}\,dx$$

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

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

Result (type 3, 193 leaves):

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

Problem 147: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Coth}[c+dx]^4}{a+b\,\text{Sech}[c+dx]^2}\,dx$$

Optimal (type 3, 87 leaves, 7 steps):

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

Result (type 3, 581 leaves):

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

$$\frac{\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)\text{Coth}[c]\,\text{Csch}[c+dx]^2\,\text{Sech}[c+dx]^2}{6(a+b)\,d\left(a+b\,\text{Sech}[c+dx]^2\right)}+\Bigg(\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)\text{Sech}[c+dx]^2$$

$$\Bigg(\Bigg(\Bigg(i\,b^3\,\text{ArcTan}\Big[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)$$

$$\left(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx]\right)\Big]\,\text{Cosh}[2c]\Bigg)\Big/\left(2a\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)-$$

$$\Bigg(i\,b^3\,\text{ArcTan}\Big[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)$$

$$\left(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx]\right)\Big]\,\text{Sinh}[2c]\Bigg)\Big/\left(2a\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\Bigg)\Bigg)\Big/$$

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

$$\frac{\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)\text{Csch}[c]\,\text{Csch}[c+dx]\,\text{Sech}[c+dx]^2\left(4a\,\text{Sinh}[dx]+7b\,\text{Sinh}[dx]\right)}{6(a+b)^2\,d\left(a+b\,\text{Sech}[c+dx]^2\right)}$$

Problem 149: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Tanh}[c+dx]^4}{\left(a+b\,\text{Sech}[c+dx]^2\right)^2}\,dx$$

Optimal (type 3, 91 leaves, 6 steps):

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

Result (type 3, 228 leaves):

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

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

$$\left(a+2\,b+a\,\text{Cosh}\left[2\,\left(c+d\,x\right)\right]\right)\,\left(\text{Cosh}\left[2\,c\right]-\text{Sinh}\left[2\,c\right]\right)\Bigg)\Big/\left(b\,\sqrt{a+b}\,d\,\sqrt{b\,\left(\text{Cosh}\left[c\right]-\text{Sinh}\left[c\right]\right)^4}\right)+$$

$$\frac{\left(a+b\right)\,\text{Sech}\left[2\,c\right]\,\left(\left(a+2\,b\right)\,\text{Sinh}\left[2\,c\right]-a\,\text{Sinh}\left[2\,d\,x\right]\right)}{b\,d}\Bigg)\Bigg)\Big/\left(8\,a^2\,\left(a+b\,\text{Sech}\left[c+d\,x\right]^2\right)^2\right)$$

Problem 151: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 85 leaves, 6 steps):

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

Result (type 3, 372 leaves):

$$\Bigg(\left(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]\right)^2\,\mathrm{Sech}[c+d\,x]^4$$

$$\Bigg(16\,x+\Bigg(\left(a^3-6\,a^2\,b-24\,a\,b^2-16\,b^3\right)\,\mathrm{ArcTanh}\Big[\frac{\mathrm{Sech}[d\,x]\,\left(\mathrm{Cosh}[2\,c]-\mathrm{Sinh}[2\,c]\right)\,\left((a+2\,b)\,\mathrm{Sinh}[d\,x]-a\,\mathrm{Sinh}[2\,c+d\,x]\right)}{2\,\sqrt{a+b}\,\sqrt{b\,\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^4}}\Big]$$

$$\left(\mathrm{Cosh}[2\,c]-\mathrm{Sinh}[2\,c]\right)\Bigg)\Big/\left(b\,(a+b)^{3/2}\,d\,\sqrt{b\,\left(\mathrm{Cosh}[c]-\mathrm{Sinh}[c]\right)^4}\right)+$$

$$\frac{\left(a^2+8\,a\,b+8\,b^2\right)\,\mathrm{Sech}[2\,c]\,\left((a+2\,b)\,\mathrm{Sinh}[2\,c]-a\,\mathrm{Sinh}[2\,d\,x]\right)}{b\,(a+b)\,d\,\left(a+2\,b+a\,\mathrm{Cosh}[2\,(c+d\,x)]\right)}\Bigg)\Bigg)\Big/\left(64\,a^2\,\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^2\right)+$$

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

Problem 153: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^2}\,dx$$

Optimal (type 3, 93 leaves, 5 steps):

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

Result (type 3, 221 leaves):

$$\Bigg((a+2b+a\,\text{Cosh}[2(c+dx)])\,\text{Sech}[c+dx]^4$$

$$\Bigg(2x(a+2b+a\,\text{Cosh}[2(c+dx)])-\Bigg(b(3a+2b)\,\text{ArcTanh}\Big[\frac{\text{Sech}[dx]\,(\text{Cosh}[2c]-\text{Sinh}[2c])\,((a+2b)\,\text{Sinh}[dx]-a\,\text{Sinh}[2c+dx])}{2\sqrt{a+b}\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}}\Big]$$

$$(a+2b+a\,\text{Cosh}[2(c+dx)])\,(\text{Cosh}[2c]-\text{Sinh}[2c])\Bigg)\Bigg/\left((a+b)^{3/2}\,d\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\right)+$$

$$\frac{b\,\text{Sech}[2c]\,((a+2b)\,\text{Sinh}[2c]-a\,\text{Sinh}[2dx])}{(a+b)\,d}\Bigg)\Bigg)\Bigg/\left(8a^2\,(a+b\,\text{Sech}[c+dx]^2)^2\right)$$

Problem 155: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Coth}[c+dx]^2}{(a+b\,\text{Sech}[c+dx]^2)^2}\,dx$$

Optimal (type 3, 121 leaves, 7 steps):

$$\frac{x}{a^2}-\frac{b^{3/2}\,(5a+2b)\,\text{ArcTanh}\Big[\frac{\sqrt{b}\,\text{Tanh}[c+dx]}{\sqrt{a+b}}\Big]}{2a^2\,(a+b)^{5/2}\,d}-\frac{(2a-b)\,\text{Coth}[c+dx]}{2a\,(a+b)^2\,d}-\frac{b\,\text{Coth}[c+dx]}{2a\,(a+b)\,d\,(a+b-b\,\text{Tanh}[c+dx]^2)}$$

Result (type 3, 268 leaves):

$$\frac{1}{8\,(a+b\,\text{Sech}[c+dx]^2)^2}(a+2b+a\,\text{Cosh}[2(c+dx)])\,\text{Sech}[c+dx]^4$$

$$\Bigg(\frac{2x\,(a+2b+a\,\text{Cosh}[2(c+dx)])}{a^2}-\Bigg(b^2(5a+2b)\,\text{ArcTanh}\Big[\frac{\text{Sech}[dx]\,(\text{Cosh}[2c]-\text{Sinh}[2c])\,((a+2b)\,\text{Sinh}[dx]-a\,\text{Sinh}[2c+dx])}{2\sqrt{a+b}\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}}\Big]$$

$$(a+2b+a\,\text{Cosh}[2(c+dx)])\,(\text{Cosh}[2c]-\text{Sinh}[2c])\Bigg)\Bigg/\left(a^2\,(a+b)^{5/2}\,d\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\right)+$$

$$\frac{2\,(a+2b+a\,\text{Cosh}[2(c+dx)])\,\text{Csch}[c]\,\text{Csch}[c+dx]\,\text{Sinh}[dx]}{(a+b)^2\,d}+\frac{b^2\,\text{Sech}[2c]\,((a+2b)\,\text{Sinh}[2c]-a\,\text{Sinh}[2dx])}{a^2\,(a+b)^2\,d}\Bigg)$$

Problem 157: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 161 leaves, 8 steps):

$$\frac{x}{a^2}-\frac{b^{5/2}\,(7 a+2 b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+d x]}{\sqrt{a+b}}\right]}{2 a^2\,(a+b)^{7/2}\,d}-\frac{\left(2 a^2+6 a b-b^2\right)\text{Coth}[c+d x]}{2 a\,(a+b)^3\,d}-\frac{(2 a-3 b)\,\text{Coth}[c+d x]^3}{6 a\,(a+b)^2\,d}-\frac{b\,\text{Coth}[c+d x]^3}{2 a\,(a+b)\,d\,\left(a+b-b\,\text{Tanh}[c+d x]^2\right)}$$

Result (type 3, 685 leaves):

$$\frac{x\,(a+2 b+a\,\text{Cosh}[2 c+2 d x])^2\,\text{Sech}[c+d x]^4}{4 a^2\left(a+b\,\text{Sech}[c+d x]^2\right)^2}-\frac{(a+2 b+a\,\text{Cosh}[2 c+2 d x])^2\,\text{Coth}[c]\,\text{Csch}[c+d x]^2\,\text{Sech}[c+d x]^4}{12\,(a+b)^2\,d\left(a+b\,\text{Sech}[c+d x]^2\right)^2}+\Bigg((7 a+2 b)\,(a+2 b+a\,\text{Cosh}[2 c+2 d x])^2$$
$$\text{Sech}[c+d x]^4\Bigg(\Bigg(i\,b^3\,\text{ArcTan}\Big[\text{Sech}[d x]\left(-\frac{i\,\text{Cosh}[2 c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4 c]-b\,\text{Sinh}[4 c]}}+\frac{i\,\text{Sinh}[2 c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4 c]-b\,\text{Sinh}[4 c]}}\right)$$
$$(-a\,\text{Sinh}[d x]-2 b\,\text{Sinh}[d x]+a\,\text{Sinh}[2 c+d x])\Big]\,\text{Cosh}[2 c]\Bigg)\Big/\left(8 a^2\sqrt{a+b}\;d\sqrt{b\,\text{Cosh}[4 c]-b\,\text{Sinh}[4 c]}\right)-$$
$$\Bigg(i\,b^3\,\text{ArcTan}\Big[\text{Sech}[d x]\left(-\frac{i\,\text{Cosh}[2 c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4 c]-b\,\text{Sinh}[4 c]}}+\frac{i\,\text{Sinh}[2 c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4 c]-b\,\text{Sinh}[4 c]}}\right)$$
$$(-a\,\text{Sinh}[d x]-2 b\,\text{Sinh}[d x]+a\,\text{Sinh}[2 c+d x])\Big]\,\text{Sinh}[2 c]\Bigg)\Big/\left(8 a^2\sqrt{a+b}\;d\sqrt{b\,\text{Cosh}[4 c]-b\,\text{Sinh}[4 c]}\right)\Bigg)\Bigg)\Big/$$
$$\left((a+b)^3\left(a+b\,\text{Sech}[c+d x]^2\right)^2\right)+\frac{(a+2 b+a\,\text{Cosh}[2 c+2 d x])^2\,\text{Csch}[c]\,\text{Csch}[c+d x]^3\,\text{Sech}[c+d x]^4\,\text{Sinh}[d x]}{12\,(a+b)^2\,d\left(a+b\,\text{Sech}[c+d x]^2\right)^2}+$$
$$\frac{(a+2 b+a\,\text{Cosh}[2 c+2 d x])^2\,\text{Csch}[c]\,\text{Csch}[c+d x]\,\text{Sech}[c+d x]^4\,(2 a\,\text{Sinh}[d x]+5 b\,\text{Sinh}[d x])}{6\,(a+b)^3\,d\left(a+b\,\text{Sech}[c+d x]^2\right)^2}+$$
$$\frac{(a+2 b+a\,\text{Cosh}[2 c+2 d x])\,\text{Sech}[2 c]\,\text{Sech}[c+d x]^4\left(a b^3\,\text{Sinh}[2 c]+2 b^4\,\text{Sinh}[2 c]-a b^3\,\text{Sinh}[2 d x]\right)}{8 a^2\,(a+b)^3\,d\left(a+b\,\text{Sech}[c+d x]^2\right)^2}$$

Problem 158: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 148 leaves, 7 steps):

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

Result (type 3, 754 leaves):

$$\frac{1}{\left(a+b\,\text{Sech}[c+dx]^2\right)^3}\left(3a^3-a^2b+4ab^2+8b^3\right)\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)^3\text{Sech}[c+dx]^6$$
$$\left(\left(i\,\text{ArcTan}\left[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)\right.\right.\right.$$
$$\left.\left.\left(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx]\right)\right]\text{Cosh}[2c]\right)\Big/\left(64a^3b^2\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)-$$
$$\left(i\,\text{ArcTan}\left[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)\right.\right.$$
$$\left.\left.\left.\left(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx]\right)\right]\text{Sinh}[2c]\right)\Big/\left(64a^3b^2\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\right)+$$
$$\frac{1}{128a^3b^2d\left(a+b\,\text{Sech}[c+dx]^2\right)^3}\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)\text{Sech}[2c]\,\text{Sech}[c+dx]^6$$
$$\left(24a^2b^2dx\,\text{Cosh}[2c]+64ab^3dx\,\text{Cosh}[2c]+64b^4dx\,\text{Cosh}[2c]+16a^2b^2dx\,\text{Cosh}[2dx]+32ab^3dx\,\text{Cosh}[2dx]+\right.$$
$$16a^2b^2dx\,\text{Cosh}[4c+2dx]+32ab^3dx\,\text{Cosh}[4c+2dx]+4a^2b^2dx\,\text{Cosh}[2c+4dx]+4a^2b^2dx\,\text{Cosh}[6c+4dx]-$$
$$9a^4\,\text{Sinh}[2c]-15a^3b\,\text{Sinh}[2c]+18a^2b^2\,\text{Sinh}[2c]+72ab^3\,\text{Sinh}[2c]+48b^4\,\text{Sinh}[2c]+9a^4\,\text{Sinh}[2dx]+$$
$$13a^3b\,\text{Sinh}[2dx]-28a^2b^2\,\text{Sinh}[2dx]-32ab^3\,\text{Sinh}[2dx]-3a^4\,\text{Sinh}[4c+2dx]+a^3b\,\text{Sinh}[4c+2dx]+$$
$$\left.20a^2b^2\,\text{Sinh}[4c+2dx]+16ab^3\,\text{Sinh}[4c+2dx]+3a^4\,\text{Sinh}[2c+4dx]-3a^3b\,\text{Sinh}[2c+4dx]-6a^2b^2\,\text{Sinh}[2c+4dx]\right)$$

Problem 160: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Tanh}[c+dx]^4}{\left(a+b\,\text{Sech}[c+dx]^2\right)^3}\,dx$$

Optimal (type 3, 139 leaves, 7 steps):

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

Result (type 3, 1730 leaves):

$$\left((a+2b+a\,\text{Cosh}[2c+2dx])^3\,\text{Sech}[c+dx]^6\left(\frac{(3a^2+8ab+8b^2)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+dx]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\frac{a\sqrt{b}\,(3a^2+16ab+16b^2+3a(a+2b)\,\text{Cosh}[2(c+dx)])\,\text{Sinh}[2(c+dx)]}{(a+b)^2(a+2b+a\,\text{Cosh}[2(c+dx)])^2}\right)\right)\Big/$$

$$\left(1024\,b^{5/2}\,d\,(a+b\,\text{Sech}[c+dx]^2)^3\right)-\left((a+2b+a\,\text{Cosh}[2c+2dx])^3\,\text{Sech}[c+dx]^6\right.$$

$$\left.\left(-\frac{3a(a+2b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+dx]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}+\frac{\sqrt{b}\,(3a^3+14a^2b+24ab^2+16b^3+a(3a^2+4ab+4b^2)\,\text{Cosh}[2(c+dx)])\,\text{Sinh}[2(c+dx)]}{(a+b)^2(a+2b+a\,\text{Cosh}[2(c+dx)])^2}\right)\right)\Big/$$

$$\left(2048\,b^{5/2}\,d\,(a+b\,\text{Sech}[c+dx]^2)^3\right)+\frac{1}{32\,(a+b\,\text{Sech}[c+dx]^2)^3}$$

$$(a+2b+a\,\text{Cosh}[2c+2dx])^3\,\text{Sech}[c+dx]^6\left(\frac{1}{(a+b)^2}(3a^5-10a^4b+80a^3b^2+480a^2b^3+640ab^4+256b^5)\right.$$

$$\left(\left(\mathbb{i}\,\text{ArcTan}\left[\text{Sech}[dx]\left(-\frac{\mathbb{i}\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{\mathbb{i}\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)\right.\right.\right.$$

$$\left.\left.(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx])\right]\text{Cosh}[2c]\right)\Big/\left(64a^3b^2\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)-$$

$$\left(\mathbb{i}\,\text{ArcTan}\left[\text{Sech}[dx]\left(-\frac{\mathbb{i}\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{\mathbb{i}\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)\right.\right.$$

$$\left.\left.\left.(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx])\right]\text{Sinh}[2c]\right)\Big/\left(64a^3b^2\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\right)+$$

$$\frac{1}{128a^3b^2(a+b)^2d\,(a+2b+a\,\text{Cosh}[2c+2dx])^2}\,\text{Sech}[2c]\,(768a^4b^2dx\,\text{Cosh}[2c]+3584a^3b^3dx\,\text{Cosh}[2c]+6912a^2b^4dx\,\text{Cosh}[2c]+$$

$$6144ab^5dx\,\text{Cosh}[2c]+2048b^6dx\,\text{Cosh}[2c]+512a^4b^2dx\,\text{Cosh}[2dx]+2048a^3b^3dx\,\text{Cosh}[2dx]+2560a^2b^4dx\,\text{Cosh}[2dx]+$$

$$1024ab^5dx\,\text{Cosh}[2dx]+512a^4b^2dx\,\text{Cosh}[4c+2dx]+2048a^3b^3dx\,\text{Cosh}[4c+2dx]+2560a^2b^4dx\,\text{Cosh}[4c+2dx]+$$

$$1024ab^5dx\,\text{Cosh}[4c+2dx]+128a^4b^2dx\,\text{Cosh}[2c+4dx]+256a^3b^3dx\,\text{Cosh}[2c+4dx]+128a^2b^4dx\,\text{Cosh}[2c+4dx]+$$

$$128a^4b^2dx\,\text{Cosh}[6c+4dx]+256a^3b^3dx\,\text{Cosh}[6c+4dx]+128a^2b^4dx\,\text{Cosh}[6c+4dx]-9a^6\,\text{Sinh}[2c]+12a^5b\,\text{Sinh}[2c]+$$

$$684a^4b^2\,\text{Sinh}[2c]+2880a^3b^3\,\text{Sinh}[2c]+5280a^2b^4\,\text{Sinh}[2c]+4608ab^5\,\text{Sinh}[2c]+1536b^6\,\text{Sinh}[2c]+9a^6\,\text{Sinh}[2dx]-$$

$$14a^5b\,\text{Sinh}[2dx]-608a^4b^2\,\text{Sinh}[2dx]-2112a^3b^3\,\text{Sinh}[2dx]-2560a^2b^4\,\text{Sinh}[2dx]-1024ab^5\,\text{Sinh}[2dx]-3a^6\,\text{Sinh}[4c+2dx]+$$

$$10a^5b\,\text{Sinh}[4c+2dx]+304a^4b^2\,\text{Sinh}[4c+2dx]+1056a^3b^3\,\text{Sinh}[4c+2dx]+1280a^2b^4\,\text{Sinh}[4c+2dx]+512ab^5\,\text{Sinh}[4c+2dx]+$$

$$3 a^6 \text{Sinh}[2 c+4 d x]-12 a^5 b \text{Sinh}[2 c+4 d x]-204 a^4 b^2 \text{Sinh}[2 c+4 d x]-384 a^3 b^3 \text{Sinh}[2 c+4 d x]-192 a^2 b^4 \text{Sinh}[2 c+4 d x]\Big)\Bigg)-$$

$$\frac{1}{2048 b^2 (a+b)^2 d \left(a+b \text{Sech}[c+d x]^2\right)^3}(a+2 b+a \text{Cosh}[2 c+2 d x])^3 \text{Sech}[c+d x]^6$$

$$\left(\frac{6 a^2 \text{ArcTanh}\left[\frac{\text{Sech}[d x] (\text{Cosh}[2 c]-\text{Sinh}[2 c]) ((a+2 b) \text{Sinh}[d x]-a \text{Sinh}[2 c+d x])}{2 \sqrt{a+b} \sqrt{b (\text{Cosh}[c]-\text{Sinh}[c])^4}}\right] (\text{Cosh}[2 c]-\text{Sinh}[2 c])}{\sqrt{a+b} \sqrt{b (\text{Cosh}[c]-\text{Sinh}[c])^4}}+\right.$$

$$\Big(a \text{Sech}[2 c] \Big(\left(-9 a^4-16 a^3 b+48 a^2 b^2+128 a b^3+64 b^4\right) \text{Sinh}[2 d x]+ a \left(-3 a^3+2 a^2 b+24 a b^2+16 b^3\right) \text{Sinh}[2 (c+2 d x)]+\left(3 a^4-64 a^2 b^2-128 a b^3-64 b^4\right) \text{Sinh}[4 c+2 d x]\Big)+$$

$$\left.\left(9 a^5+18 a^4 b-64 a^3 b^2-256 a^2 b^3-320 a b^4-128 b^5\right) \text{Tanh}[2 c]\Big) \Big/ \left(a^2 (a+2 b+a \text{Cosh}[2 (c+d x)])^2\right)\right)$$

Problem 162: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 139 leaves, 7 steps):

$$\frac{x}{a^3}-\frac{\left(3 a^2+12 a b+8 b^2\right) \text{ArcTanh}\left[\frac{\sqrt{b} \text{Tanh}[c+d x]}{\sqrt{a+b}}\right]}{8 a^3 \sqrt{b} (a+b)^{3/2} d}-\frac{\text{Tanh}[c+d x]}{4 a d \left(a+b-b \text{Tanh}[c+d x]^2\right)^2}-\frac{(3 a+4 b) \text{Tanh}[c+d x]}{8 a^2 (a+b) d \left(a+b-b \text{Tanh}[c+d x]^2\right)}$$

Result (type 3, 1730 leaves):

$$-\Bigg(\Bigg((a+2 b+a \text{Cosh}[2 c+2 d x])^3 \text{Sech}[c+d x]^6$$

$$\left(\frac{\left(3 a^2+8 a b+8 b^2\right) \text{ArcTanh}\left[\frac{\sqrt{b} \text{Tanh}[c+d x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\frac{a \sqrt{b} \left(3 a^2+16 a b+16 b^2+3 a (a+2 b) \text{Cosh}[2 (c+d x)]\right) \text{Sinh}[2 (c+d x)]}{(a+b)^2 (a+2 b+a \text{Cosh}[2 (c+d x)])^2}\right)\Bigg)\Bigg/$$

$$\left(1024 b^{5/2} d \left(a+b \text{Sech}[c+d x]^2\right)^3\right)\Bigg)-\Big((a+2 b+a \text{Cosh}[2 c+2 d x])^3 \text{Sech}[c+d x]^6$$

$$\left(-\frac{3\,a\,(a+2\,b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+d\,x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}+\frac{\sqrt{b}\,\left(3\,a^3+14\,a^2\,b+24\,a\,b^2+16\,b^3+a\,\left(3\,a^2+4\,a\,b+4\,b^2\right)\,\text{Cosh}[2\,(c+d\,x)]\right)\,\text{Sinh}[2\,(c+d\,x)]}{(a+b)^2\,\left(a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)]\right)^2}\right)\Bigg)\Big/$$

$$\left(2048\,b^{5/2}\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3\right)+\frac{1}{32\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3}$$

$$(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])^3\,\text{Sech}[c+d\,x]^6\,\Bigg(\frac{1}{(a+b)^2}\left(3\,a^5-10\,a^4\,b+80\,a^3\,b^2+480\,a^2\,b^3+640\,a\,b^4+256\,b^5\right)$$

$$\Bigg(\Bigg(\text{i}\,\text{ArcTan}\Big[\text{Sech}[d\,x]\,\left(-\frac{\text{i}\,\text{Cosh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}+\frac{\text{i}\,\text{Sinh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}\right)$$

$$(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x])\Big]\,\text{Cosh}[2\,c]\Bigg)\Big/\left(64\,a^3\,b^2\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)-$$

$$\Bigg(\text{i}\,\text{ArcTan}\Big[\text{Sech}[d\,x]\,\left(-\frac{\text{i}\,\text{Cosh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}+\frac{\text{i}\,\text{Sinh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}\right)$$

$$(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x])\Big]\,\text{Sinh}[2\,c]\Bigg)\Big/\left(64\,a^3\,b^2\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)\Bigg)+$$

$$\frac{1}{128\,a^3\,b^2\,(a+b)^2\,d\,(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])^2}\,\text{Sech}[2\,c]\,\Big(768\,a^4\,b^2\,d\,x\,\text{Cosh}[2\,c]+3584\,a^3\,b^3\,d\,x\,\text{Cosh}[2\,c]+6912\,a^2\,b^4\,d\,x\,\text{Cosh}[2\,c]+$$

$$6144\,a\,b^5\,d\,x\,\text{Cosh}[2\,c]+2048\,b^6\,d\,x\,\text{Cosh}[2\,c]+512\,a^4\,b^2\,d\,x\,\text{Cosh}[2\,d\,x]+2048\,a^3\,b^3\,d\,x\,\text{Cosh}[2\,d\,x]+2560\,a^2\,b^4\,d\,x\,\text{Cosh}[2\,d\,x]+$$
$$1024\,a\,b^5\,d\,x\,\text{Cosh}[2\,d\,x]+512\,a^4\,b^2\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+2048\,a^3\,b^3\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+2560\,a^2\,b^4\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+$$
$$1024\,a\,b^5\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+128\,a^4\,b^2\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+256\,a^3\,b^3\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+128\,a^2\,b^4\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+$$
$$128\,a^4\,b^2\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+256\,a^3\,b^3\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+128\,a^2\,b^4\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]-9\,a^6\,\text{Sinh}[2\,c]+12\,a^5\,b\,\text{Sinh}[2\,c]+$$
$$684\,a^4\,b^2\,\text{Sinh}[2\,c]+2880\,a^3\,b^3\,\text{Sinh}[2\,c]+5280\,a^2\,b^4\,\text{Sinh}[2\,c]+4608\,a\,b^5\,\text{Sinh}[2\,c]+1536\,b^6\,\text{Sinh}[2\,c]+9\,a^6\,\text{Sinh}[2\,d\,x]-$$
$$14\,a^5\,b\,\text{Sinh}[2\,d\,x]-608\,a^4\,b^2\,\text{Sinh}[2\,d\,x]-2112\,a^3\,b^3\,\text{Sinh}[2\,d\,x]-2560\,a^2\,b^4\,\text{Sinh}[2\,d\,x]-1024\,a\,b^5\,\text{Sinh}[2\,d\,x]-3\,a^6\,\text{Sinh}[4\,c+2\,d\,x]+$$
$$10\,a^5\,b\,\text{Sinh}[4\,c+2\,d\,x]+304\,a^4\,b^2\,\text{Sinh}[4\,c+2\,d\,x]+1056\,a^3\,b^3\,\text{Sinh}[4\,c+2\,d\,x]+1280\,a^2\,b^4\,\text{Sinh}[4\,c+2\,d\,x]+512\,a\,b^5\,\text{Sinh}[4\,c+2\,d\,x]+$$
$$3\,a^6\,\text{Sinh}[2\,c+4\,d\,x]-12\,a^5\,b\,\text{Sinh}[2\,c+4\,d\,x]-204\,a^4\,b^2\,\text{Sinh}[2\,c+4\,d\,x]-384\,a^3\,b^3\,\text{Sinh}[2\,c+4\,d\,x]-192\,a^2\,b^4\,\text{Sinh}[2\,c+4\,d\,x]\Big)\Bigg)+$$

$$\frac{1}{2048\,b^2\,(a+b)^2\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3}\,(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])^3$$

$$\text{Sech}[c+d\,x]^6$$

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

$$\Big(a\,\text{Sech}[2\,c]\,\Big(\left(-9\,a^4-16\,a^3\,b+48\,a^2\,b^2+128\,a\,b^3+64\,b^4\right)\,\text{Sinh}[2\,d\,x]+$$
$$a\,\left(-3\,a^3+2\,a^2\,b+24\,a\,b^2+16\,b^3\right)\,\text{Sinh}[2\,(c+2\,d\,x)]+\left(3\,a^4-64\,a^2\,b^2-128\,a\,b^3-64\,b^4\right)\,\text{Sinh}[4\,c+2\,d\,x]\Big)+$$

$$\Big(9\, a^5+18\, a^4\, b-64\, a^3\, b^2-256\, a^2\, b^3-320\, a\, b^4-128\, b^5\Big)\, \text{Tanh}[2\, c]\Big) \Big/ \Big(a^2\, \big(a+2\, b+a\, \text{Cosh}[2\, (c+d\, x)]\big)^2\Big)\Bigg)$$

Problem 164: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 146 leaves, 6 steps):

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

Result (type 3, 597 leaves):

$$\frac{x\, (a+2\, b+a\, \text{Cosh}[2\, c+2\, d\, x])^3\, \text{Sech}[c+d\, x]^6}{8\, a^3\, \left(a+b\, \text{Sech}[c+d\, x]^2\right)^3}+\frac{1}{(a+b)^2\, \left(a+b\, \text{Sech}[c+d\, x]^2\right)^3}\left(15\, a^2+20\, a\, b+8\, b^2\right)\, (a+2\, b+a\, \text{Cosh}[2\, c+2\, d\, x])^3$$

$$\text{Sech}[c+d\, x]^6\, \Bigg(\Bigg(i\, b\, \text{ArcTan}\Bigg[\text{Sech}[d\, x]\, \Bigg(-\frac{i\, \text{Cosh}[2\, c]}{2\, \sqrt{a+b}\, \sqrt{b\, \text{Cosh}[4\, c]-b\, \text{Sinh}[4\, c]}}+\frac{i\, \text{Sinh}[2\, c]}{2\, \sqrt{a+b}\, \sqrt{b\, \text{Cosh}[4\, c]-b\, \text{Sinh}[4\, c]}}\Bigg)$$

$$(-a\, \text{Sinh}[d\, x]-2\, b\, \text{Sinh}[d\, x]+a\, \text{Sinh}[2\, c+d\, x])\Bigg]\, \text{Cosh}[2\, c]\Bigg) \Bigg/ \left(64\, a^3\, \sqrt{a+b}\, d\, \sqrt{b\, \text{Cosh}[4\, c]-b\, \text{Sinh}[4\, c]}\right)-$$

$$\Bigg(i\, b\, \text{ArcTan}\Bigg[\text{Sech}[d\, x]\, \Bigg(-\frac{i\, \text{Cosh}[2\, c]}{2\, \sqrt{a+b}\, \sqrt{b\, \text{Cosh}[4\, c]-b\, \text{Sinh}[4\, c]}}+\frac{i\, \text{Sinh}[2\, c]}{2\, \sqrt{a+b}\, \sqrt{b\, \text{Cosh}[4\, c]-b\, \text{Sinh}[4\, c]}}\Bigg)$$

$$(-a\, \text{Sinh}[d\, x]-2\, b\, \text{Sinh}[d\, x]+a\, \text{Sinh}[2\, c+d\, x])\Bigg]\, \text{Sinh}[2\, c]\Bigg) \Bigg/ \left(64\, a^3\, \sqrt{a+b}\, d\, \sqrt{b\, \text{Cosh}[4\, c]-b\, \text{Sinh}[4\, c]}\right)\Bigg)+$$

$$\Big(\big(a+2\, b+a\, \text{Cosh}[2\, c+2\, d\, x]\big)^2\, \text{Sech}[2\, c]\, \text{Sech}[c+d\, x]^6\, \big(9\, a^2\, b\, \text{Sinh}[2\, c]+28\, a\, b^2\, \text{Sinh}[2\, c]+16\, b^3\, \text{Sinh}[2\, c]-$$

$$9\, a^2\, b\, \text{Sinh}[2\, d\, x]-6\, a\, b^2\, \text{Sinh}[2\, d\, x]\big)\Big) \Big/ \left(64\, a^3\, (a+b)^2\, d\, \left(a+b\, \text{Sech}[c+d\, x]^2\right)^3\right)+$$

$$\Big(\big(a+2\, b+a\, \text{Cosh}[2\, c+2\, d\, x]\big)\, \text{Sech}[2\, c]\, \text{Sech}[c+d\, x]^6\, \big(-a\, b^2\, \text{Sinh}[2\, c]-2\, b^3\, \text{Sinh}[2\, c]+a\, b^2\, \text{Sinh}[2\, d\, x]\big)\Big) \Big/$$

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

Problem 165: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 130 leaves, 4 steps):

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

Result (type 3, 358 leaves):

$$\frac{1}{4 a^3 (a+b)^3 d (a+2 b+a \operatorname{Cosh}[2 (c+d x)])^2}\Big(12 a^3 b^2+40 a^2 b^3+40 a b^4+12 b^5+9 a^4 b \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+33 a^3 b^2 \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+$$
$$51 a^2 b^3 \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+32 a b^4 \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+$$
$$8 b^5 \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+6 a^5 \operatorname{Log}[\operatorname{Sinh}[c+d x]]+16 a^4 b \operatorname{Log}[\operatorname{Sinh}[c+d x]]+16 a^3 b^2 \operatorname{Log}[\operatorname{Sinh}[c+d x]]+$$
$$a^2 \operatorname{Cosh}[4 (c+d x)] \left(b \left(3 a^2+3 a b+b^2\right) \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+2 a^3 \operatorname{Log}[\operatorname{Sinh}[c+d x]]\right)+$$
$$4 a \operatorname{Cosh}[2 (c+d x)] \left(b^2 \left(3 a^2+5 a b+2 b^2\right)+b \left(3 a^3+9 a^2 b+7 a b^2+2 b^3\right) \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+2 a^3 (a+2 b) \operatorname{Log}[\operatorname{Sinh}[c+d x]]\right)\Big)$$

Problem 166: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 182 leaves, 8 steps):

$$\frac{x}{a^3}-\frac{b^{3/2} \left(35 a^2+28 a b+8 b^2\right) \operatorname{ArcTanh}\left[\frac{\sqrt{b} \operatorname{Tanh}[c+d x]}{\sqrt{a+b}}\right]}{8 a^3 (a+b)^{7/2} d}-\frac{\left(8 a^2-11 a b-4 b^2\right) \operatorname{Coth}[c+d x]}{8 a^2 (a+b)^3 d}-$$
$$\frac{b \operatorname{Coth}[c+d x]}{4 a (a+b) d \left(a+b-b \operatorname{Tanh}[c+d x]^2\right)^2}-\frac{b (9 a+4 b) \operatorname{Coth}[c+d x]}{8 a^2 (a+b)^2 d \left(a+b-b \operatorname{Tanh}[c+d x]^2\right)}$$

Result (type 3, 2083 leaves):

$$\frac{1}{(a+b)^3\,(a+b\,\text{Sech}[c+d\,x]^2)^3}\,(35\,a^2+28\,a\,b+8\,b^2)\,(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])^3\,\text{Sech}[c+d\,x]^6$$

$$\left(\left(\left(i\,b^2\,\text{ArcTan}\Big[\text{Sech}[d\,x]\left(-\frac{i\,\text{Cosh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}+\frac{i\,\text{Sinh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}\right)\right.\right.\right.$$

$$\left.\left.(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x])\Big]\,\text{Cosh}[2\,c]\right)\Big/\left(64\,a^3\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)-$$

$$\left(i\,b^2\,\text{ArcTan}\Big[\text{Sech}[d\,x]\left(-\frac{i\,\text{Cosh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}+\frac{i\,\text{Sinh}[2\,c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}\right)\right.$$

$$\left.\left.(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x])\Big]\,\text{Sinh}[2\,c]\right)\Big/\left(64\,a^3\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)\right)+$$

$$\frac{1}{512\,a^3\,(a+b)^3\,d\,(a+b\,\text{Sech}[c+d\,x]^2)^3}\,(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])\,\text{Csch}[c]\,\text{Csch}[c+d\,x]\,\text{Sech}[2\,c]\,\text{Sech}[c+d\,x]^6$$

$$\begin{aligned}
&(8\,a^5\,d\,x\,\text{Cosh}[d\,x]+56\,a^4\,b\,d\,x\,\text{Cosh}[d\,x]+184\,a^3\,b^2\,d\,x\,\text{Cosh}[d\,x]+296\,a^2\,b^3\,d\,x\,\text{Cosh}[d\,x]+224\,a\,b^4\,d\,x\,\text{Cosh}[d\,x]+64\,b^5\,d\,x\,\text{Cosh}[d\,x]-\\
&12\,a^5\,d\,x\,\text{Cosh}[3\,d\,x]-68\,a^4\,b\,d\,x\,\text{Cosh}[3\,d\,x]-132\,a^3\,b^2\,d\,x\,\text{Cosh}[3\,d\,x]-108\,a^2\,b^3\,d\,x\,\text{Cosh}[3\,d\,x]-32\,a\,b^4\,d\,x\,\text{Cosh}[3\,d\,x]-\\
&8\,a^5\,d\,x\,\text{Cosh}[2\,c-d\,x]-56\,a^4\,b\,d\,x\,\text{Cosh}[2\,c-d\,x]-184\,a^3\,b^2\,d\,x\,\text{Cosh}[2\,c-d\,x]-296\,a^2\,b^3\,d\,x\,\text{Cosh}[2\,c-d\,x]-224\,a\,b^4\,d\,x\,\text{Cosh}[2\,c-d\,x]-\\
&64\,b^5\,d\,x\,\text{Cosh}[2\,c-d\,x]-8\,a^5\,d\,x\,\text{Cosh}[2\,c+d\,x]-56\,a^4\,b\,d\,x\,\text{Cosh}[2\,c+d\,x]-184\,a^3\,b^2\,d\,x\,\text{Cosh}[2\,c+d\,x]-296\,a^2\,b^3\,d\,x\,\text{Cosh}[2\,c+d\,x]-\\
&224\,a\,b^4\,d\,x\,\text{Cosh}[2\,c+d\,x]-64\,b^5\,d\,x\,\text{Cosh}[2\,c+d\,x]+8\,a^5\,d\,x\,\text{Cosh}[4\,c+d\,x]+56\,a^4\,b\,d\,x\,\text{Cosh}[4\,c+d\,x]+184\,a^3\,b^2\,d\,x\,\text{Cosh}[4\,c+d\,x]+\\
&296\,a^2\,b^3\,d\,x\,\text{Cosh}[4\,c+d\,x]+224\,a\,b^4\,d\,x\,\text{Cosh}[4\,c+d\,x]+64\,b^5\,d\,x\,\text{Cosh}[4\,c+d\,x]+12\,a^5\,d\,x\,\text{Cosh}[2\,c+3\,d\,x]+68\,a^4\,b\,d\,x\,\text{Cosh}[2\,c+3\,d\,x]+\\
&132\,a^3\,b^2\,d\,x\,\text{Cosh}[2\,c+3\,d\,x]+108\,a^2\,b^3\,d\,x\,\text{Cosh}[2\,c+3\,d\,x]+32\,a\,b^4\,d\,x\,\text{Cosh}[2\,c+3\,d\,x]-12\,a^5\,d\,x\,\text{Cosh}[4\,c+3\,d\,x]-\\
&68\,a^4\,b\,d\,x\,\text{Cosh}[4\,c+3\,d\,x]-132\,a^3\,b^2\,d\,x\,\text{Cosh}[4\,c+3\,d\,x]-108\,a^2\,b^3\,d\,x\,\text{Cosh}[4\,c+3\,d\,x]-32\,a\,b^4\,d\,x\,\text{Cosh}[4\,c+3\,d\,x]+\\
&12\,a^5\,d\,x\,\text{Cosh}[6\,c+3\,d\,x]+68\,a^4\,b\,d\,x\,\text{Cosh}[6\,c+3\,d\,x]+132\,a^3\,b^2\,d\,x\,\text{Cosh}[6\,c+3\,d\,x]+108\,a^2\,b^3\,d\,x\,\text{Cosh}[6\,c+3\,d\,x]+\\
&32\,a\,b^4\,d\,x\,\text{Cosh}[6\,c+3\,d\,x]-4\,a^5\,d\,x\,\text{Cosh}[2\,c+5\,d\,x]-12\,a^4\,b\,d\,x\,\text{Cosh}[2\,c+5\,d\,x]-12\,a^3\,b^2\,d\,x\,\text{Cosh}[2\,c+5\,d\,x]-4\,a^2\,b^3\,d\,x\,\text{Cosh}[2\,c+5\,d\,x]+\\
&4\,a^5\,d\,x\,\text{Cosh}[4\,c+5\,d\,x]+12\,a^4\,b\,d\,x\,\text{Cosh}[4\,c+5\,d\,x]+12\,a^3\,b^2\,d\,x\,\text{Cosh}[4\,c+5\,d\,x]+4\,a^2\,b^3\,d\,x\,\text{Cosh}[4\,c+5\,d\,x]-4\,a^5\,d\,x\,\text{Cosh}[6\,c+5\,d\,x]-\\
&12\,a^4\,b\,d\,x\,\text{Cosh}[6\,c+5\,d\,x]-12\,a^3\,b^2\,d\,x\,\text{Cosh}[6\,c+5\,d\,x]-4\,a^2\,b^3\,d\,x\,\text{Cosh}[6\,c+5\,d\,x]+4\,a^5\,d\,x\,\text{Cosh}[8\,c+5\,d\,x]+12\,a^4\,b\,d\,x\,\text{Cosh}[8\,c+5\,d\,x]+\\
&12\,a^3\,b^2\,d\,x\,\text{Cosh}[8\,c+5\,d\,x]+4\,a^2\,b^3\,d\,x\,\text{Cosh}[8\,c+5\,d\,x]-32\,a^5\,\text{Sinh}[d\,x]-64\,a^4\,b\,\text{Sinh}[d\,x]-30\,a^2\,b^3\,\text{Sinh}[d\,x]-120\,a\,b^4\,\text{Sinh}[d\,x]-\\
&48\,b^5\,\text{Sinh}[d\,x]+32\,a^5\,\text{Sinh}[3\,d\,x]+64\,a^4\,b\,\text{Sinh}[3\,d\,x]+26\,a^3\,b^2\,\text{Sinh}[3\,d\,x]+86\,a^2\,b^3\,\text{Sinh}[3\,d\,x]+32\,a\,b^4\,\text{Sinh}[3\,d\,x]-48\,a^5\,\text{Sinh}[2\,c-d\,x]-\\
&128\,a^4\,b\,\text{Sinh}[2\,c-d\,x]-128\,a^3\,b^2\,\text{Sinh}[2\,c-d\,x]-30\,a^2\,b^3\,\text{Sinh}[2\,c-d\,x]-120\,a\,b^4\,\text{Sinh}[2\,c-d\,x]-48\,b^5\,\text{Sinh}[2\,c-d\,x]+\\
&48\,a^5\,\text{Sinh}[2\,c+d\,x]+128\,a^4\,b\,\text{Sinh}[2\,c+d\,x]+102\,a^3\,b^2\,\text{Sinh}[2\,c+d\,x]-86\,a^2\,b^3\,\text{Sinh}[2\,c+d\,x]-136\,a\,b^4\,\text{Sinh}[2\,c+d\,x]-\\
&48\,b^5\,\text{Sinh}[2\,c+d\,x]-32\,a^5\,\text{Sinh}[4\,c+d\,x]-64\,a^4\,b\,\text{Sinh}[4\,c+d\,x]+26\,a^3\,b^2\,\text{Sinh}[4\,c+d\,x]+86\,a^2\,b^3\,\text{Sinh}[4\,c+d\,x]+136\,a\,b^4\,\text{Sinh}[4\,c+d\,x]+\\
&48\,b^5\,\text{Sinh}[4\,c+d\,x]-8\,a^5\,\text{Sinh}[2\,c+3\,d\,x]-26\,a^3\,b^2\,\text{Sinh}[2\,c+3\,d\,x]-86\,a^2\,b^3\,\text{Sinh}[2\,c+3\,d\,x]-32\,a\,b^4\,\text{Sinh}[2\,c+3\,d\,x]+\\
&32\,a^5\,\text{Sinh}[4\,c+3\,d\,x]+64\,a^4\,b\,\text{Sinh}[4\,c+3\,d\,x]-13\,a^3\,b^2\,\text{Sinh}[4\,c+3\,d\,x]-36\,a^2\,b^3\,\text{Sinh}[4\,c+3\,d\,x]-16\,a\,b^4\,\text{Sinh}[4\,c+3\,d\,x]-\\
&8\,a^5\,\text{Sinh}[6\,c+3\,d\,x]+13\,a^3\,b^2\,\text{Sinh}[6\,c+3\,d\,x]+36\,a^2\,b^3\,\text{Sinh}[6\,c+3\,d\,x]+16\,a\,b^4\,\text{Sinh}[6\,c+3\,d\,x]+8\,a^5\,\text{Sinh}[2\,c+5\,d\,x]+\\
&13\,a^3\,b^2\,\text{Sinh}[2\,c+5\,d\,x]+6\,a^2\,b^3\,\text{Sinh}[2\,c+5\,d\,x]-13\,a^3\,b^2\,\text{Sinh}[4\,c+5\,d\,x]-6\,a^2\,b^3\,\text{Sinh}[4\,c+5\,d\,x]+8\,a^5\,\text{Sinh}[6\,c+5\,d\,x])
\end{aligned}$$

Problem 168: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Coth}[c+d\,x]^4}{(a+b\,\text{Sech}[c+d\,x]^2)^3}\,dx$$

Optimal (type 3, 232 leaves, 9 steps):

$$\frac{x}{a^3}-\frac{b^{5/2}\left(63 a^2+36 a b+8 b^2\right) \text{ArcTanh}\left[\frac{\sqrt{b}\, \text{Tanh}[c+d x]}{\sqrt{a+b}}\right]}{8 a^3 (a+b)^{9/2} d}-\frac{\left(8 a^3+32 a^2 b-15 a b^2-4 b^3\right) \text{Coth}[c+d x]}{8 a^2 (a+b)^4 d}-\frac{\left(8 a^2-39 a b-12 b^2\right) \text{Coth}[c+d x]^3}{24 a^2 (a+b)^3 d}-\frac{b\, \text{Coth}[c+d x]^3}{4 a (a+b) d \left(a+b-b\, \text{Tanh}[c+d x]^2\right)^2}-\frac{b (11 a+4 b) \text{Coth}[c+d x]^3}{8 a^2 (a+b)^2 d \left(a+b-b\, \text{Tanh}[c+d x]^2\right)}$$

Result (type 3, 3334 leaves):

$$\frac{1}{(a+b)^4 \left(a+b\, \text{Sech}[c+d x]^2\right)^3}\left(63 a^2+36 a b+8 b^2\right) (a+2 b+a\, \text{Cosh}[2 c+2 d x])^3\, \text{Sech}[c+d x]^6$$
$$\left(\left(\left(\mathrm{i}\, b^3 \text{ArcTan}\left[\text{Sech}[d x] \left(-\frac{\mathrm{i}\, \text{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b\, \text{Cosh}[4 c]-b\, \text{Sinh}[4 c]}}+\frac{\mathrm{i}\, \text{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b\, \text{Cosh}[4 c]-b\, \text{Sinh}[4 c]}}\right)\right.\right.\right.\right.$$
$$\left.\left.\left.(-a\, \text{Sinh}[d x]-2 b\, \text{Sinh}[d x]+a\, \text{Sinh}[2 c+d x])\right] \text{Cosh}[2 c]\right) \Big/ \left(64 a^3 \sqrt{a+b}\, d \sqrt{b\, \text{Cosh}[4 c]-b\, \text{Sinh}[4 c]}\right)-$$
$$\left(\mathrm{i}\, b^3 \text{ArcTan}\left[\text{Sech}[d x] \left(-\frac{\mathrm{i}\, \text{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b\, \text{Cosh}[4 c]-b\, \text{Sinh}[4 c]}}+\frac{\mathrm{i}\, \text{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b\, \text{Cosh}[4 c]-b\, \text{Sinh}[4 c]}}\right)\right.\right.$$
$$\left.\left.\left.(-a\, \text{Sinh}[d x]-2 b\, \text{Sinh}[d x]+a\, \text{Sinh}[2 c+d x])\right] \text{Sinh}[2 c]\right) \Big/ \left(64 a^3 \sqrt{a+b}\, d \sqrt{b\, \text{Cosh}[4 c]-b\, \text{Sinh}[4 c]}\right)\right)+$$
$$\frac{1}{6144 a^3 (a+b)^4 d \left(a+b\, \text{Sech}[c+d x]^2\right)^3}(a+2 b+a\, \text{Cosh}[2 c+2 d x])\, \text{Csch}[c]\, \text{Csch}[c+d x]^3\, \text{Sech}[2 c]\, \text{Sech}[c+d x]^6$$
$$\left(-36 a^6 d x \text{Cosh}[d x]-336 a^5 b d x \text{Cosh}[d x]-1560 a^4 b^2 d x \text{Cosh}[d x]-3600 a^3 b^3 d x \text{Cosh}[d x]-4260 a^2 b^4 d x \text{Cosh}[d x]-2496 a b^5 d x \text{Cosh}[d x]-\right.$$
$$576 b^6 d x \text{Cosh}[d x]+36 a^6 d x \text{Cosh}[3 d x]+240 a^5 b d x \text{Cosh}[3 d x]+408 a^4 b^2 d x \text{Cosh}[3 d x]-48 a^3 b^3 d x \text{Cosh}[3 d x]-$$
$$732 a^2 b^4 d x \text{Cosh}[3 d x]-672 a b^5 d x \text{Cosh}[3 d x]-192 b^6 d x \text{Cosh}[3 d x]+36 a^6 d x \text{Cosh}[2 c-d x]+336 a^5 b d x \text{Cosh}[2 c-d x]+$$
$$1560 a^4 b^2 d x \text{Cosh}[2 c-d x]+3600 a^3 b^3 d x \text{Cosh}[2 c-d x]+4260 a^2 b^4 d x \text{Cosh}[2 c-d x]+2496 a b^5 d x \text{Cosh}[2 c-d x]+$$
$$576 b^6 d x \text{Cosh}[2 c-d x]+36 a^6 d x \text{Cosh}[2 c+d x]+336 a^5 b d x \text{Cosh}[2 c+d x]+1560 a^4 b^2 d x \text{Cosh}[2 c+d x]+3600 a^3 b^3 d x \text{Cosh}[2 c+d x]+$$
$$4260 a^2 b^4 d x \text{Cosh}[2 c+d x]+2496 a b^5 d x \text{Cosh}[2 c+d x]+576 b^6 d x \text{Cosh}[2 c+d x]-36 a^6 d x \text{Cosh}[4 c+d x]-336 a^5 b d x \text{Cosh}[4 c+d x]-$$
$$1560 a^4 b^2 d x \text{Cosh}[4 c+d x]-3600 a^3 b^3 d x \text{Cosh}[4 c+d x]-4260 a^2 b^4 d x \text{Cosh}[4 c+d x]-2496 a b^5 d x \text{Cosh}[4 c+d x]-$$
$$576 b^6 d x \text{Cosh}[4 c+d x]-36 a^6 d x \text{Cosh}[2 c+3 d x]-240 a^5 b d x \text{Cosh}[2 c+3 d x]-408 a^4 b^2 d x \text{Cosh}[2 c+3 d x]+48 a^3 b^3 d x \text{Cosh}[2 c+3 d x]+$$
$$732 a^2 b^4 d x \text{Cosh}[2 c+3 d x]+672 a b^5 d x \text{Cosh}[2 c+3 d x]+192 b^6 d x \text{Cosh}[2 c+3 d x]+36 a^6 d x \text{Cosh}[4 c+3 d x]+$$
$$240 a^5 b d x \text{Cosh}[4 c+3 d x]+408 a^4 b^2 d x \text{Cosh}[4 c+3 d x]-48 a^3 b^3 d x \text{Cosh}[4 c+3 d x]-732 a^2 b^4 d x \text{Cosh}[4 c+3 d x]-$$
$$672 a b^5 d x \text{Cosh}[4 c+3 d x]-192 b^6 d x \text{Cosh}[4 c+3 d x]-36 a^6 d x \text{Cosh}[6 c+3 d x]-240 a^5 b d x \text{Cosh}[6 c+3 d x]-$$
$$408 a^4 b^2 d x \text{Cosh}[6 c+3 d x]+48 a^3 b^3 d x \text{Cosh}[6 c+3 d x]+732 a^2 b^4 d x \text{Cosh}[6 c+3 d x]+672 a b^5 d x \text{Cosh}[6 c+3 d x]+$$
$$192 b^6 d x \text{Cosh}[6 c+3 d x]-12 a^6 d x \text{Cosh}[2 c+5 d x]-144 a^5 b d x \text{Cosh}[2 c+5 d x]-456 a^4 b^2 d x \text{Cosh}[2 c+5 d x]-$$
$$624 a^3 b^3 d x \text{Cosh}[2 c+5 d x]-396 a^2 b^4 d x \text{Cosh}[2 c+5 d x]-96 a b^5 d x \text{Cosh}[2 c+5 d x]+12 a^6 d x \text{Cosh}[4 c+5 d x]+$$
$$144 a^5 b d x \text{Cosh}[4 c+5 d x]+456 a^4 b^2 d x \text{Cosh}[4 c+5 d x]+624 a^3 b^3 d x \text{Cosh}[4 c+5 d x]+396 a^2 b^4 d x \text{Cosh}[4 c+5 d x]+$$
$$96 a b^5 d x \text{Cosh}[4 c+5 d x]-12 a^6 d x \text{Cosh}[6 c+5 d x]-144 a^5 b d x \text{Cosh}[6 c+5 d x]-456 a^4 b^2 d x \text{Cosh}[6 c+5 d x]-$$
$$624 a^3 b^3 d x \text{Cosh}[6 c+5 d x]-396 a^2 b^4 d x \text{Cosh}[6 c+5 d x]-96 a b^5 d x \text{Cosh}[6 c+5 d x]+12 a^6 d x \text{Cosh}[8 c+5 d x]+$$
$$144 a^5 b d x \text{Cosh}[8 c+5 d x]+456 a^4 b^2 d x \text{Cosh}[8 c+5 d x]+624 a^3 b^3 d x \text{Cosh}[8 c+5 d x]+396 a^2 b^4 d x \text{Cosh}[8 c+5 d x]+$$

$$96\,a\,b^5\,d\,x\,\text{Cosh}[8\,c+5\,d\,x]-12\,a^6\,d\,x\,\text{Cosh}[4\,c+7\,d\,x]-48\,a^5\,b\,d\,x\,\text{Cosh}[4\,c+7\,d\,x]-72\,a^4\,b^2\,d\,x\,\text{Cosh}[4\,c+7\,d\,x]-48\,a^3\,b^3\,d\,x\,\text{Cosh}[4\,c+7\,d\,x]-$$
$$12\,a^2\,b^4\,d\,x\,\text{Cosh}[4\,c+7\,d\,x]+12\,a^6\,d\,x\,\text{Cosh}[6\,c+7\,d\,x]+48\,a^5\,b\,d\,x\,\text{Cosh}[6\,c+7\,d\,x]+72\,a^4\,b^2\,d\,x\,\text{Cosh}[6\,c+7\,d\,x]+$$
$$48\,a^3\,b^3\,d\,x\,\text{Cosh}[6\,c+7\,d\,x]+12\,a^2\,b^4\,d\,x\,\text{Cosh}[6\,c+7\,d\,x]-12\,a^6\,d\,x\,\text{Cosh}[8\,c+7\,d\,x]-48\,a^5\,b\,d\,x\,\text{Cosh}[8\,c+7\,d\,x]-$$
$$72\,a^4\,b^2\,d\,x\,\text{Cosh}[8\,c+7\,d\,x]-48\,a^3\,b^3\,d\,x\,\text{Cosh}[8\,c+7\,d\,x]-12\,a^2\,b^4\,d\,x\,\text{Cosh}[8\,c+7\,d\,x]+12\,a^6\,d\,x\,\text{Cosh}[10\,c+7\,d\,x]+$$
$$48\,a^5\,b\,d\,x\,\text{Cosh}[10\,c+7\,d\,x]+72\,a^4\,b^2\,d\,x\,\text{Cosh}[10\,c+7\,d\,x]+48\,a^3\,b^3\,d\,x\,\text{Cosh}[10\,c+7\,d\,x]+12\,a^2\,b^4\,d\,x\,\text{Cosh}[10\,c+7\,d\,x]-128\,a^6\,\text{Sinh}[d\,x]-$$
$$440\,a^5\,b\,\text{Sinh}[d\,x]-1152\,a^4\,b^2\,\text{Sinh}[d\,x]-1920\,a^3\,b^3\,\text{Sinh}[d\,x]+228\,a^2\,b^4\,\text{Sinh}[d\,x]+1320\,a\,b^5\,\text{Sinh}[d\,x]+432\,b^6\,\text{Sinh}[d\,x]+$$
$$48\,a^6\,\text{Sinh}[3\,d\,x]+104\,a^5\,b\,\text{Sinh}[3\,d\,x]+640\,a^4\,b^2\,\text{Sinh}[3\,d\,x]+1511\,a^3\,b^3\,\text{Sinh}[3\,d\,x]-528\,a^2\,b^4\,\text{Sinh}[3\,d\,x]+264\,a\,b^5\,\text{Sinh}[3\,d\,x]+$$
$$144\,b^6\,\text{Sinh}[3\,d\,x]-32\,a^6\,\text{Sinh}[2\,c-d\,x]+384\,a^5\,b\,\text{Sinh}[2\,c-d\,x]+2048\,a^4\,b^2\,\text{Sinh}[2\,c-d\,x]+3072\,a^3\,b^3\,\text{Sinh}[2\,c-d\,x]+$$
$$228\,a^2\,b^4\,\text{Sinh}[2\,c-d\,x]+1320\,a\,b^5\,\text{Sinh}[2\,c-d\,x]+432\,b^6\,\text{Sinh}[2\,c-d\,x]+32\,a^6\,\text{Sinh}[2\,c+d\,x]-384\,a^5\,b\,\text{Sinh}[2\,c+d\,x]-$$
$$2048\,a^4\,b^2\,\text{Sinh}[2\,c+d\,x]-2919\,a^3\,b^3\,\text{Sinh}[2\,c+d\,x]+642\,a^2\,b^4\,\text{Sinh}[2\,c+d\,x]+1416\,a\,b^5\,\text{Sinh}[2\,c+d\,x]+432\,b^6\,\text{Sinh}[2\,c+d\,x]-$$
$$128\,a^6\,\text{Sinh}[4\,c+d\,x]-440\,a^5\,b\,\text{Sinh}[4\,c+d\,x]-1152\,a^4\,b^2\,\text{Sinh}[4\,c+d\,x]-2073\,a^3\,b^3\,\text{Sinh}[4\,c+d\,x]-642\,a^2\,b^4\,\text{Sinh}[4\,c+d\,x]-$$
$$1416\,a\,b^5\,\text{Sinh}[4\,c+d\,x]-432\,b^6\,\text{Sinh}[4\,c+d\,x]-144\,a^6\,\text{Sinh}[2\,c+3\,d\,x]-672\,a^5\,b\,\text{Sinh}[2\,c+3\,d\,x]-960\,a^4\,b^2\,\text{Sinh}[2\,c+3\,d\,x]+$$
$$153\,a^3\,b^3\,\text{Sinh}[2\,c+3\,d\,x]+528\,a^2\,b^4\,\text{Sinh}[2\,c+3\,d\,x]-264\,a\,b^5\,\text{Sinh}[2\,c+3\,d\,x]-144\,b^6\,\text{Sinh}[2\,c+3\,d\,x]+48\,a^6\,\text{Sinh}[4\,c+3\,d\,x]+$$
$$104\,a^5\,b\,\text{Sinh}[4\,c+3\,d\,x]+640\,a^4\,b^2\,\text{Sinh}[4\,c+3\,d\,x]+1664\,a^3\,b^3\,\text{Sinh}[4\,c+3\,d\,x]-66\,a^2\,b^4\,\text{Sinh}[4\,c+3\,d\,x]-408\,a\,b^5\,\text{Sinh}[4\,c+3\,d\,x]-$$
$$144\,b^6\,\text{Sinh}[4\,c+3\,d\,x]-144\,a^6\,\text{Sinh}[6\,c+3\,d\,x]-672\,a^5\,b\,\text{Sinh}[6\,c+3\,d\,x]-960\,a^4\,b^2\,\text{Sinh}[6\,c+3\,d\,x]+66\,a^2\,b^4\,\text{Sinh}[6\,c+3\,d\,x]+$$
$$408\,a\,b^5\,\text{Sinh}[6\,c+3\,d\,x]+144\,b^6\,\text{Sinh}[6\,c+3\,d\,x]+80\,a^6\,\text{Sinh}[2\,c+5\,d\,x]+480\,a^5\,b\,\text{Sinh}[2\,c+5\,d\,x]+832\,a^4\,b^2\,\text{Sinh}[2\,c+5\,d\,x]+$$
$$294\,a^2\,b^4\,\text{Sinh}[2\,c+5\,d\,x]+96\,a\,b^5\,\text{Sinh}[2\,c+5\,d\,x]-48\,a^6\,\text{Sinh}[4\,c+5\,d\,x]-120\,a^5\,b\,\text{Sinh}[4\,c+5\,d\,x]-294\,a^2\,b^4\,\text{Sinh}[4\,c+5\,d\,x]-$$
$$96\,a\,b^5\,\text{Sinh}[4\,c+5\,d\,x]+80\,a^6\,\text{Sinh}[6\,c+5\,d\,x]+480\,a^5\,b\,\text{Sinh}[6\,c+5\,d\,x]+832\,a^4\,b^2\,\text{Sinh}[6\,c+5\,d\,x]-51\,a^3\,b^3\,\text{Sinh}[6\,c+5\,d\,x]-$$
$$132\,a^2\,b^4\,\text{Sinh}[6\,c+5\,d\,x]-48\,a\,b^5\,\text{Sinh}[6\,c+5\,d\,x]-48\,a^6\,\text{Sinh}[8\,c+5\,d\,x]-120\,a^5\,b\,\text{Sinh}[8\,c+5\,d\,x]+51\,a^3\,b^3\,\text{Sinh}[8\,c+5\,d\,x]+$$
$$132\,a^2\,b^4\,\text{Sinh}[8\,c+5\,d\,x]+48\,a\,b^5\,\text{Sinh}[8\,c+5\,d\,x]+32\,a^6\,\text{Sinh}[4\,c+7\,d\,x]+104\,a^5\,b\,\text{Sinh}[4\,c+7\,d\,x]+51\,a^3\,b^3\,\text{Sinh}[4\,c+7\,d\,x]+$$
$$18\,a^2\,b^4\,\text{Sinh}[4\,c+7\,d\,x]-51\,a^3\,b^3\,\text{Sinh}[6\,c+7\,d\,x]-18\,a^2\,b^4\,\text{Sinh}[6\,c+7\,d\,x]+32\,a^6\,\text{Sinh}[8\,c+7\,d\,x]+104\,a^5\,b\,\text{Sinh}[8\,c+7\,d\,x]\Big)$$

Problem 169: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 207 leaves, 7 steps):

$$\frac{x}{a^4}-\frac{\sqrt{b}\,\left(35\,a^3+70\,a^2\,b+56\,a\,b^2+16\,b^3\right)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+d\,x]}{\sqrt{a+b}}\right]}{16\,a^4\,\left(a+b\right)^{7/2}\,d}-\frac{b\,\text{Tanh}[c+d\,x]}{6\,a\,\left(a+b\right)\,d\,\left(a+b-b\,\text{Tanh}[c+d\,x]^2\right)^3}-$$
$$\frac{b\,\left(11\,a+6\,b\right)\,\text{Tanh}[c+d\,x]}{24\,a^2\,\left(a+b\right)^2\,d\,\left(a+b-b\,\text{Tanh}[c+d\,x]^2\right)^2}-\frac{b\,\left(19\,a^2+22\,a\,b+8\,b^2\right)\,\text{Tanh}[c+d\,x]}{16\,a^3\,\left(a+b\right)^3\,d\,\left(a+b-b\,\text{Tanh}[c+d\,x]^2\right)}$$

Result (type 3, 1405 leaves):

$$\frac{1}{(a+b)^3\,(a+b\,\text{Sech}[c+d\,x]^2)^4}\left(35\,a^3+70\,a^2\,b+56\,a\,b^2+16\,b^3\right)\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^4$$

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

$$\left.\left.(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x])\right]\,\text{Cosh}[2\,c]\right)\Big/\left(256\,a^4\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)-$$

$$\left(i\,b\,\text{ArcTan}\left[\text{Sech}[d\,x]\left(-\frac{i\,\text{Cosh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}+\frac{i\,\text{Sinh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}\right)\right.\right.$$

$$\left.\left.\left.(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x])\right]\,\text{Sinh}[2\,c]\right)\Big/\left(256\,a^4\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)\right)+$$

$$\frac{1}{3072\,a^4\,(a+b)^3\,d\,(a+b\,\text{Sech}[c+d\,x]^2)^4}\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)\,\text{Sech}[2\,c]\,\text{Sech}[c+d\,x]^8$$

$$\begin{aligned}&(480\,a^6\,d\,x\,\text{Cosh}[2\,c]+3168\,a^5\,b\,d\,x\,\text{Cosh}[2\,c]+8928\,a^4\,b^2\,d\,x\,\text{Cosh}[2\,c]+14\,112\,a^3\,b^3\,d\,x\,\text{Cosh}[2\,c]+13\,248\,a^2\,b^4\,d\,x\,\text{Cosh}[2\,c]+\\&6912\,a\,b^5\,d\,x\,\text{Cosh}[2\,c]+1536\,b^6\,d\,x\,\text{Cosh}[2\,c]+360\,a^6\,d\,x\,\text{Cosh}[2\,d\,x]+2232\,a^5\,b\,d\,x\,\text{Cosh}[2\,d\,x]+5688\,a^4\,b^2\,d\,x\,\text{Cosh}[2\,d\,x]+\\&7272\,a^3\,b^3\,d\,x\,\text{Cosh}[2\,d\,x]+4608\,a^2\,b^4\,d\,x\,\text{Cosh}[2\,d\,x]+1152\,a\,b^5\,d\,x\,\text{Cosh}[2\,d\,x]+360\,a^6\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+\\&2232\,a^5\,b\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+5688\,a^4\,b^2\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+7272\,a^3\,b^3\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+4608\,a^2\,b^4\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+\\&1152\,a\,b^5\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+144\,a^6\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+720\,a^5\,b\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+1296\,a^4\,b^2\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+\\&1008\,a^3\,b^3\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+288\,a^2\,b^4\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+144\,a^6\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+720\,a^5\,b\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+\\&1296\,a^4\,b^2\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+1008\,a^3\,b^3\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+288\,a^2\,b^4\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+24\,a^6\,d\,x\,\text{Cosh}[4\,c+6\,d\,x]+\\&72\,a^5\,b\,d\,x\,\text{Cosh}[4\,c+6\,d\,x]+72\,a^4\,b^2\,d\,x\,\text{Cosh}[4\,c+6\,d\,x]+24\,a^3\,b^3\,d\,x\,\text{Cosh}[4\,c+6\,d\,x]+24\,a^6\,d\,x\,\text{Cosh}[8\,c+6\,d\,x]+\\&72\,a^5\,b\,d\,x\,\text{Cosh}[8\,c+6\,d\,x]+72\,a^4\,b^2\,d\,x\,\text{Cosh}[8\,c+6\,d\,x]+24\,a^3\,b^3\,d\,x\,\text{Cosh}[8\,c+6\,d\,x]+870\,a^5\,b\,\text{Sinh}[2\,c]+4292\,a^4\,b^2\,\text{Sinh}[2\,c]+\\&8792\,a^3\,b^3\,\text{Sinh}[2\,c]+9936\,a^2\,b^4\,\text{Sinh}[2\,c]+5824\,a\,b^5\,\text{Sinh}[2\,c]+1408\,b^6\,\text{Sinh}[2\,c]-870\,a^5\,b\,\text{Sinh}[2\,d\,x]-3792\,a^4\,b^2\,\text{Sinh}[2\,d\,x]-\\&6432\,a^3\,b^3\,\text{Sinh}[2\,d\,x]-4608\,a^2\,b^4\,\text{Sinh}[2\,d\,x]-1248\,a\,b^5\,\text{Sinh}[2\,d\,x]+435\,a^5\,b\,\text{Sinh}[4\,c+2\,d\,x]+2124\,a^4\,b^2\,\text{Sinh}[4\,c+2\,d\,x]+\\&3972\,a^3\,b^3\,\text{Sinh}[4\,c+2\,d\,x]+3072\,a^2\,b^4\,\text{Sinh}[4\,c+2\,d\,x]+864\,a\,b^5\,\text{Sinh}[4\,c+2\,d\,x]-435\,a^5\,b\,\text{Sinh}[2\,c+4\,d\,x]-\\&1374\,a^4\,b^2\,\text{Sinh}[2\,c+4\,d\,x]-1248\,a^3\,b^3\,\text{Sinh}[2\,c+4\,d\,x]-384\,a^2\,b^4\,\text{Sinh}[2\,c+4\,d\,x]+87\,a^5\,b\,\text{Sinh}[6\,c+4\,d\,x]+366\,a^4\,b^2\,\text{Sinh}[6\,c+4\,d\,x]+\\&408\,a^3\,b^3\,\text{Sinh}[6\,c+4\,d\,x]+144\,a^2\,b^4\,\text{Sinh}[6\,c+4\,d\,x]-87\,a^5\,b\,\text{Sinh}[4\,c+6\,d\,x]-116\,a^4\,b^2\,\text{Sinh}[4\,c+6\,d\,x]-44\,a^3\,b^3\,\text{Sinh}[4\,c+6\,d\,x])\end{aligned}$$

Problem 181: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 59 leaves, 6 steps):

$$\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tanh}[x]}{\sqrt{a+b-b\,\text{Tanh}[x]^2}}\right]+\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Tanh}[x]}{\sqrt{a+b-b\,\text{Tanh}[x]^2}}\right]$$

Result (type 3, 134 leaves):

$$\frac{1}{a+2b+a\,\text{Cosh}[2x]}\sqrt{2}\,\text{Cosh}[x]\left(\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{2}\,\sqrt{b}\,\text{Sinh}[x]}{\sqrt{a+2b+a\,\text{Cosh}[2x]}}\right]\sqrt{a+2b+a\,\text{Cosh}[2x]}+\sqrt{a}\,\sqrt{a+b}\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\text{Sinh}[x]}{\sqrt{a+b}}\right]\sqrt{\frac{a+2b+a\,\text{Cosh}[2x]}{a+b}}\right)\sqrt{a+b\,\text{Sech}[x]^2}$$

Problem 189: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 57 leaves, 6 steps):

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

Result (type 3, 117 leaves):

$$-\left(\left(2\left(b\sqrt{a+2b+a\,\text{Cosh}[2x]}+4a\,\text{Cosh}[x]^2\sqrt{a+2b+a\,\text{Cosh}[2x]}-3\sqrt{2}\,a^{3/2}\,\text{Cosh}[x]^3\,\text{Log}\left[\sqrt{2}\,\sqrt{a}\,\text{Cosh}[x]+\sqrt{a+2b+a\,\text{Cosh}[2x]}\right]\right)\left(a+b\,\text{Sech}[x]^2\right)^{3/2}\right)\Big/\left(3\left(a+2b+a\,\text{Cosh}[2x]\right)^{3/2}\right)\right)$$

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

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

Optimal (type 3, 70 leaves, 8 steps):

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

Result (type 3, 159 leaves):

$$-\left(\left(2\left(b+a\,\text{Cosh}[x]^2\right)\left(\sqrt{2}\,(a+b)^2\,\text{ArcTanh}\left[\frac{\sqrt{2}\,\sqrt{a+b}\,\text{Cosh}[x]}{\sqrt{a+2b+a\,\text{Cosh}[2x]}}\right]\text{Cosh}[x]-\sqrt{a+b}\left(b\sqrt{a+2b+a\,\text{Cosh}[2x]}+\sqrt{2}\,a^{3/2}\,\text{Cosh}[x]\,\text{Log}\left[\sqrt{2}\,\sqrt{a}\,\text{Cosh}[x]+\sqrt{a+2b+a\,\text{Cosh}[2x]}\right]\right)\right)\sqrt{a+b\,\text{Sech}[x]^2}\right)\Big/\left(\sqrt{a+b}\left(a+2b+a\,\text{Cosh}[2x]\right)^{3/2}\right)\right)$$

Problem 196: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tanh}[x]^3}{\sqrt{a+b\,\text{Sech}[x]^2}}\,dx$$

Optimal (type 3, 42 leaves, 5 steps):

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

Result (type 3, 105 leaves):

$$\frac{\sqrt{a+2\,b+a\,\text{Cosh}[2\,x]}\;\text{Log}\left[\sqrt{2}\;\sqrt{a}\;\text{Cosh}[x]+\sqrt{a+2\,b+a\,\text{Cosh}[2\,x]}\right]\;\text{Sech}[x]}{\sqrt{2}\;\sqrt{a}\;\sqrt{a+b\,\text{Sech}[x]^2}}+\frac{(a+2\,b+a\,\text{Cosh}[2\,x])\;\text{Sech}[x]^2}{2\,b\,\sqrt{a+b\,\text{Sech}[x]^2}}$$

Problem 198: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tanh}[x]}{\sqrt{a+b\,\text{Sech}[x]^2}}\,dx$$

Optimal (type 3, 25 leaves, 4 steps):

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

Result (type 3, 70 leaves):

$$\frac{\sqrt{a+2\,b+a\,\text{Cosh}[2\,x]}\;\text{Log}\left[\sqrt{2}\;\sqrt{a}\;\text{Cosh}[x]+\sqrt{a+2\,b+a\,\text{Cosh}[2\,x]}\right]\;\text{Sech}[x]}{\sqrt{2}\;\sqrt{a}\;\sqrt{a+b\,\text{Sech}[x]^2}}$$

Problem 199: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{a+b\,\text{Sech}[x]^2}}\,dx$$

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

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

Result (type 3, 69 leaves) :

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{2}\ \sqrt{a}\ \text{Sinh}[x]}{\sqrt{a+2\ b+a\ \text{Cosh}[2\ x]}}\right]\ \sqrt{a+2\ b+a\ \text{Cosh}[2\ x]}\ \ \text{Sech}[x]}{\sqrt{2}\ \sqrt{a}\ \sqrt{a+b\ \text{Sech}[x]^2}}$$

Problem 200: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Coth}[x]}{\sqrt{a+b\ \text{Sech}[x]^2}}\, dx$$

Optimal (type 3, 56 leaves, 7 steps) :

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

Result (type 3, 124 leaves) :

$$\left(\sqrt{a+2\ b+a\ \text{Cosh}[2\ x]}\ \left(-\sqrt{a}\ \text{ArcTanh}\left[\frac{\sqrt{2}\ \sqrt{a+b}\ \ \text{Cosh}[x]}{\sqrt{a+2\ b+a\ \text{Cosh}[2\ x]}}\right]+\sqrt{a+b}\ \ \text{Log}\left[\sqrt{2}\ \sqrt{a}\ \ \text{Cosh}[x]+\sqrt{a+2\ b+a\ \text{Cosh}[2\ x]}\ \right]\right)\ \text{Sech}[x]\right)\Big/$$
$$\left(\sqrt{2}\ \sqrt{a}\ \sqrt{a+b}\ \sqrt{a+b\ \text{Sech}[x]^2}\right)$$

Problem 205: Result more than twice size of optimal antiderivative.

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

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

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\ \text{Sech}[x]^2}}{\sqrt{a}}\right]}{a^{3/2}}-\frac{a+b}{a\ b\ \sqrt{a+b\ \text{Sech}[x]^2}}$$

Result (type 3, 103 leaves) :

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

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

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

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

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

Result (type 3, 105 leaves):

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

Problem 207: Result more than twice size of optimal antiderivative.

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

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

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sech}[x]^2}}{\sqrt{a}}\right]}{a^{3/2}}-\frac{1}{a\sqrt{a+b\,\text{Sech}[x]^2}}$$

Result (type 3, 98 leaves):

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

Problem 218: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 109 leaves, 9 steps):

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

Result (type 3, 242 leaves):

$$\frac{1}{8\,\left(a+b\,\text{Sech}[x]^2\right)^{5/2}}\left(-\frac{2\,b\,\text{Cosh}[x]\,(a+2\,b+a\,\text{Cosh}[2\,x])\,\left(7\,a^2+16\,a\,b+6\,b^2+a\,(7\,a+4\,b)\,\text{Cosh}[2\,x]\right)}{3\,a^2\,(a+b)^2}-\frac{1}{\sqrt{2}\,a^{5/2}\,(a+b)^{5/2}}(a+2\,b+a\,\text{Cosh}[2\,x])^{5/2}\left(\sqrt{a}\,\left(a^2-2\,a\,b-b^2\right)\text{ArcTanh}\left[\frac{\sqrt{2}\,\sqrt{a+b}\,\text{Cosh}[x]}{\sqrt{a+2\,b+a\,\text{Cosh}[2\,x]}}\right]+(a+b)^2\left(\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{2\,a+2\,b}\,\text{Cosh}[x]}{\sqrt{a+2\,b+a\,\text{Cosh}[2\,x]}}\right]-2\,\sqrt{a+b}\,\text{Log}\left[\sqrt{2}\,\sqrt{a}\,\text{Cosh}[x]+\sqrt{a+2\,b+a\,\text{Cosh}[2\,x]}\right]\right)\right)\right)\text{Sech}[x]^5$$

Problem 220: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(a+b\,\text{Sech}[c+d\,x]^2\right)^{7/2}}\,dx$$

Optimal (type 3, 183 leaves, 7 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Tanh}[c+d\,x]}{\sqrt{a+b-b\,\text{Tanh}[c+d\,x]^2}}\right]}{a^{7/2}\,d}-\frac{b\,\text{Tanh}[c+d\,x]}{5\,a\,(a+b)\,d\,\left(a+b-b\,\text{Tanh}[c+d\,x]^2\right)^{5/2}}-\frac{b\,(9\,a+5\,b)\,\text{Tanh}[c+d\,x]}{15\,a^2\,(a+b)^2\,d\,\left(a+b-b\,\text{Tanh}[c+d\,x]^2\right)^{3/2}}-\frac{b\,\left(33\,a^2+40\,a\,b+15\,b^2\right)\text{Tanh}[c+d\,x]}{15\,a^3\,(a+b)^3\,d\,\sqrt{a+b-b\,\text{Tanh}[c+d\,x]^2}}$$

Result (type 3, 749 leaves):

$$\frac{1}{8\,a^3\,\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^{7/2}}\,\left(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]\right)^{7/2}$$

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

$$\left.\left.\left.\left.\left.e^{-2\,c}\,\left(a+a\,e^{2\,(c+d\,x)}+2\,b\,e^{2\,(c+d\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,(c+d\,x)}+a\,\left(1+e^{2\,(c+d\,x)}\right)^2}\right)\right]\right)\right)\right)\right/\left(4\,\sqrt{2}\,\sqrt{a}\,d\,\sqrt{4\,b+a\,e^{-2\,(c+d\,x)}\,\left(1+e^{2\,(c+d\,x)}\right)^2}\right)+$$

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

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

$$\left.\left(4\,\sqrt{2}\,\sqrt{a}\,d\,\sqrt{4\,b+a\,e^{-2\,(c+d\,x)}\,\left(1+e^{2\,(c+d\,x)}\right)^2}\right)\right)\,\mathrm{Sech}[c+d\,x]^7+\frac{1}{\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^{7/2}}$$

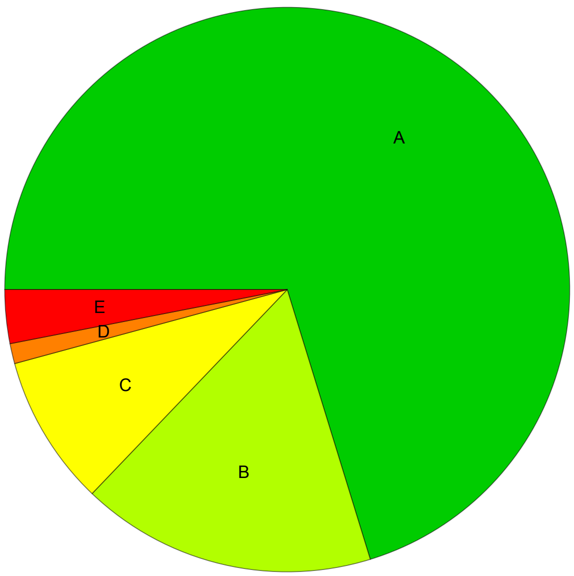
$$\left(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]\right)^4\,\mathrm{Sech}[c+d\,x]^7\,\left(-\frac{b^3\,\mathrm{Sinh}[c+d\,x]}{10\,a^3\,(a+b)\,d\,\left(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]\right)^3}+\right.$$

$$\frac{-45\,a^2\,b\,\mathrm{Sinh}[c+d\,x]-60\,a\,b^2\,\mathrm{Sinh}[c+d\,x]-23\,b^3\,\mathrm{Sinh}[c+d\,x]}{120\,a^3\,(a+b)^3\,d\,\left(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]\right)}+$$

$$\left.\frac{15\,a\,b^2\,\mathrm{Sinh}[c+d\,x]+11\,b^3\,\mathrm{Sinh}[c+d\,x]}{60\,a^3\,(a+b)^2\,d\,\left(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]\right)^2}\right)$$

Summary of Integration Test Results

521 integration problems



A - 366 optimal antiderivatives

B - 88 more than twice size of optimal antiderivatives

C - 45 unnecessarily complex antiderivatives

D - 6 unable to integrate problems

E - 16 integration timeouts