Mathematica 11.3 Integration Test Results

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):

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

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):

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

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):

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

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):

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

Result (type 3, 480 leaves):

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

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):

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

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):

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

Result (type 3, 409 leaves):

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

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

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

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

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

Result (type 3, 213 leaves):

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

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

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

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

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

Result (type 3, 294 leaves):

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

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):

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

Result (type 3, 372 leaves):

$$\frac{1}{48\, a^{5/2}\, \sqrt{b}\, d\, \left(b + a\, \text{Cosh}[c + d\, x]^2\right)} \left(a + 2\, b + a\, \text{Cosh}[2\, (c + d\, x)]\right)$$

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

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

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

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

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):

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

Result (type 3, 236 leaves):

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

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

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

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

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

$$\left.\left.\left.\frac{2\, a\, \text{Cosh}[2\, c]\, \text{Sinh}[2\, d\, x]}{d}\right)\right)\right) \Big/ \left(16\, \left(a + b\, \text{Sech}[c + d\, x]^2\right)\right)$$

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):

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

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):

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

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):

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

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):

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

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):

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

Result (type 3, 216 leaves):

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

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

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

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

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

Result (type 3, 1330 leaves):

$$-\Bigg(\Bigg(\left(a+2 b+a\,\text{Cosh}[2 c+2 d x]\right)^2\text{Sech}[c+d x]^4\Bigg(16 x+\Bigg(\left(a^3-6 a^2 b-24 a b^2-16 b^3\right)\text{ArcTanh}\Big[\left(\text{Sech}[d x]\left(\text{Cosh}[2 c]-\text{Sinh}[2 c]\right)\left((a+2 b)\,\text{Sinh}[d x]-a\,\text{Sinh}[2 c+d x]\right)\right)\Big/\left(2\sqrt{a+b}\,\sqrt{b\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^4}\right)\Big]\left(\text{Cosh}[2 c]-\text{Sinh}[2 c]\right)\Bigg)\Big/\left(b\,(a+b)^{3/2} d\sqrt{b\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^4}\right)+\left(\left(a^2+8 a b+8 b^2\right)\text{Sech}[2 c]\left((a+2 b)\,\text{Sinh}[2 c]-a\,\text{Sinh}[2 d x]\right)\right)\Big/\left(b\,(a+b)\,d\left(a+2 b+a\,\text{Cosh}[2 (c+d x)]\right)\right)\Bigg)\Bigg)\Big/$$

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

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

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

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

$$\text{Sech}[c+d x]^4$$

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

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

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

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

$$\frac{1}{8\,a^4\,b\,(a+b)\,d\,(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])}\text{Sech}[2\,c]\,\big(160\,a^4\,b\,d\,x\,\text{Cosh}[2\,c]+1248\,a^3\,b^2\,d\,x\,\text{Cosh}[2\,c]+3392\,a^2\,b^3\,d\,x\,\text{Cosh}[2\,c]+3840\,a\,b^4\,d\,x\,\text{Cosh}[2\,c]+1536\,b^5\,d\,x\,\text{Cosh}[2\,c]+80\,a^4\,b\,d\,x\,\text{Cosh}[2\,d\,x]+464\,a^3\,b^2\,d\,x\,\text{Cosh}[2\,d\,x]+768\,a^2\,b^3\,d\,x\,\text{Cosh}[2\,d\,x]+384\,a\,b^4\,d\,x\,\text{Cosh}[2\,d\,x]+80\,a^4\,b\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+464\,a^3\,b^2\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+768\,a^2\,b^3\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+384\,a\,b^4\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+a^5\,\text{Sinh}[2\,c]+34\,a^4\,b\,\text{Sinh}[2\,c]+224\,a^3\,b^2\,\text{Sinh}[2\,c]+576\,a^2\,b^3\,\text{Sinh}[2\,c]+640\,a\,b^4\,\text{Sinh}[2\,c]+256\,b^5\,\text{Sinh}[2\,c]-a^5\,\text{Sinh}[2\,d\,x]-62\,a^4\,b\,\text{Sinh}[2\,d\,x]-318\,a^3\,b^2\,\text{Sinh}[2\,d\,x]-512\,a^2\,b^3\,\text{Sinh}[2\,d\,x]-256\,a\,b^4\,\text{Sinh}[2\,d\,x]-30\,a^4\,b\,\text{Sinh}[4\,c+2\,d\,x]-158\,a^3\,b^2\,\text{Sinh}[4\,c+2\,d\,x]-256\,a^2\,b^3\,\text{Sinh}[4\,c+2\,d\,x]-128\,a\,b^4\,\text{Sinh}[4\,c+2\,d\,x]-12\,a^4\,b\,\text{Sinh}[2\,c+4\,d\,x]-36\,a^3\,b^2\,\text{Sinh}[2\,c+4\,d\,x]-24\,a^2\,b^3\,\text{Sinh}[2\,c+4\,d\,x]-12\,a^4\,b\,\text{Sinh}[6\,c+4\,d\,x]-36\,a^3\,b^2\,\text{Sinh}[6\,c+4\,d\,x]-24\,a^2\,b^3\,\text{Sinh}[6\,c+4\,d\,x]+2\,a^4\,b\,\text{Sinh}[4\,c+6\,d\,x]+2\,a^3\,b^2\,\text{Sinh}[4\,c+6\,d\,x]+2\,a^4\,b\,\text{Sinh}[8\,c+6\,d\,x]+2\,a^3\,b^2\,\text{Sinh}[8\,c+6\,d\,x]\big)\Big)$$

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

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

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

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

Result (type 3, 861 leaves):

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

$$\left(\frac{1}{b^{3/2}}9\,a^3\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d\,x}{2}\right]+\right.\right.\right.$$
$$\left.\left.\text{Cosh}[c]\left(\sqrt{a}-\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\,\text{Tanh}\left[\frac{d\,x}{2}\right]\right)\right)\right]+$$
$$576\,a\,\sqrt{b}\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d\,x}{2}\right]+\right.\right.$$
$$\left.\left.\text{Cosh}[c]\left(\sqrt{a}-\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\,\text{Tanh}\left[\frac{d\,x}{2}\right]\right)\right)\right]+$$
$$960\,b^{3/2}\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d\,x}{2}\right]+\right.\right.$$
$$\left.\left.\text{Cosh}[c]\left(\sqrt{a}-\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\,\text{Tanh}\left[\frac{d\,x}{2}\right]\right)\right)\right]+\frac{1}{b^{3/2}}$$
$$9\,a^3\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}+\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d\,x}{2}\right]+\right.\right.$$
$$\left.\left.\text{Cosh}[c]\left(\sqrt{a}+\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\,\text{Tanh}\left[\frac{d\,x}{2}\right]\right)\right)\right]+$$
$$576\,a\,\sqrt{b}\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}+\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d\,x}{2}\right]+\right.\right.$$
$$\left.\left.\text{Cosh}[c]\left(\sqrt{a}+\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\,\text{Tanh}\left[\frac{d\,x}{2}\right]\right)\right)\right]+$$
$$960\,b^{3/2}\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}+\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\right)\text{Sinh}[c]\,\text{Tanh}\left[\frac{d\,x}{2}\right]+\right.\right.$$
$$\left.\left.\text{Cosh}[c]\left(\sqrt{a}+\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\,\text{Tanh}\left[\frac{d\,x}{2}\right]\right)\right)\right]-$$
$$\frac{9\,a^3\,\text{ArcTan}\left[\frac{\sqrt{a}-\mathbb{i}\,\sqrt{a+b}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{b}}\right]}{b^{3/2}}-\frac{9\,a^3\,\text{ArcTan}\left[\frac{\sqrt{a}+\mathbb{i}\,\sqrt{a+b}\,\text{Tanh}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{b}}\right]}{b^{3/2}}-$$
$$96\,\sqrt{a}\,(3\,a+8\,b)\,\text{Cosh}[c]\,\text{Cosh}[d\,x]+$$
$$32\,a^{3/2}\,\text{Cosh}[3\,c]\,\text{Cosh}[3\,d\,x]-\frac{384\,a^{3/2}\,b\,\text{Cosh}[c+d\,x]}{a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)]}-$$
$$\frac{384\,\sqrt{a}\,b^2\,\text{Cosh}[c+d\,x]}{a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)]}-288\,a^{3/2}\,\text{Sinh}[c]\,\text{Sinh}[d\,x]-$$
$$\left.768\,\sqrt{a}\,b\,\text{Sinh}[c]\,\text{Sinh}[d\,x]+32\,a^{3/2}\,\text{Sinh}[3\,c]\,\text{Sinh}[3\,d\,x]\right)$$

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):

$$\Big(\big(a+2b+a\,\text{Cosh}[2c+2dx]\big)^2\,\text{Sech}[c+dx]^4\,\Big(16x+\Big(\big(a^3-6a^2b-24ab^2-16b^3\big)\,\text{ArcTanh}\Big[\big(\text{Sech}[dx]\,(\text{Cosh}[2c]-\text{Sinh}[2c])\,\big((a+2b)\,\text{Sinh}[dx]-a\,\text{Sinh}[2c+dx]\big)\big)\Big/\Big(2\sqrt{a+b}\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\Big)\Big]\,(\text{Cosh}[2c]-\text{Sinh}[2c])\Big)\Big/\Big(b\,(a+b)^{3/2}\,d\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\Big)+\Big(\big(a^2+8ab+8b^2\big)\,\text{Sech}[2c]\,\big((a+2b)\,\text{Sinh}[2c]-a\,\text{Sinh}[2dx]\big)\Big)\Big/\Big(b\,(a+b)\,d\,\big(a+2b+a\,\text{Cosh}[2(c+dx)]\big)\Big)\Big)\Big)\Big/$$

$$\Big(128a^2\,\big(a+b\,\text{Sech}[c+dx]^2\big)^2\Big)+\Big(\big(a+2b+a\,\text{Cosh}[2c+2dx]\big)^2\,\text{Sech}[c+dx]^4\,\Big(-64\,(a+2b)\,x+\Big(\big(-a^4+16a^3b+144a^2b^2+256ab^3+128b^4\big)\,\text{ArcTanh}\Big[\big(\text{Sech}[dx]\,(\text{Cosh}[2c]-\text{Sinh}[2c])\,\big((a+2b)\,\text{Sinh}[dx]-a\,\text{Sinh}[2c+dx]\big)\big)\Big/\Big(2\sqrt{a+b}\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\Big)\Big]\,(\text{Cosh}[2c]-\text{Sinh}[2c])\Big)\Big/\Big(b\,(a+b)^{3/2}\,d\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\Big)+\frac{16a\,\text{Cosh}[2dx]\,\text{Sinh}[2c]}{d}+\frac{16a\,\text{Cosh}[2c]\,\text{Sinh}[2dx]}{d}-\Big(\big(a^3+18a^2b+48ab^2+32b^3\big)\,\text{Sech}[2c]\,\big((a+2b)\,\text{Sinh}[2c]-a\,\text{Sinh}[2dx]\big)\Big)\Big/\Big(b\,(a+b)\,d\,\big(a+2b+a\,\text{Cosh}[2(c+dx)]\big)\Big)\Big)\Big)\Big/$$

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

$$\Big(256\,b^{3/2}\,d\,\big(a+b\,\text{Sech}[c+dx]^2\big)^2\Big)+$$

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

$$\Big(16\,\big(a+b\,\text{Sech}[c+dx]^2\big)^2\Big)$$

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

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

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

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

Result (type 3, 479 leaves):

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

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

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

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

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

Result (type 3, 377 leaves):

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

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

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

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

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

Result (type 3, 220 leaves):

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

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

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

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

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

Result (type 3, 462 leaves):

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

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):

$$-\frac{\left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^2 \operatorname{Coth}[c] \operatorname{Csch}[c+d x]^2 \operatorname{Sech}[c+d x]^4}{12 (a+b)^2 d \left(a+b \operatorname{Sech}[c+d x]^2\right)^2}+$$

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

$$\left(\left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^2 \operatorname{Csch}[c] \operatorname{Csch}[c+d x]^3 \operatorname{Sech}[c+d x]^4 \operatorname{Sinh}[d x]\right) \Big/ \left(12 (a+b)^2 d \left(a+b \operatorname{Sech}[c+d x]^2\right)^2\right)+$$

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

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

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

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

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

$$\frac{3\left(a^2+12 a b+16 b^2\right) x}{8 a^5}-\frac{3 \sqrt{b}\left(5 a^2+20 a b+16 b^2\right) \operatorname{ArcTanh}\left[\frac{\sqrt{b} \operatorname{Tanh}[c+d x]}{\sqrt{a+b}}\right]}{8 a^5 \sqrt{a+b}\, d}-\frac{(5 a+8 b) \operatorname{Cosh}[c+d x] \operatorname{Sinh}[c+d x]}{8 a^2 d\left(a+b-b \operatorname{Tanh}[c+d x]^2\right)^2}+\frac{\operatorname{Cosh}[c+d x]^3 \operatorname{Sinh}[c+d x]}{4 a d\left(a+b-b \operatorname{Tanh}[c+d x]^2\right)^2}-\frac{b(7 a+12 b) \operatorname{Tanh}[c+d x]}{8 a^3 d\left(a+b-b \operatorname{Tanh}[c+d x]^2\right)^2}-\frac{3 b(a+2 b) \operatorname{Tanh}[c+d x]}{2 a^4 d\left(a+b-b \operatorname{Tanh}[c+d x]^2\right)}$$

Result (type 3, 4019 leaves):

$$\left(3\left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3 \operatorname{Sech}[c+d x]^6\left(\frac{\left(3 a^2+8 a b+8 b^2\right) \operatorname{ArcTanh}\left[\frac{\sqrt{b} \operatorname{Tanh}[c+d x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\left(a \sqrt{b}\left(3 a^2+16 a b+16 b^2+3 a(a+2 b) \operatorname{Cosh}[2(c+d x)]\right) \operatorname{Sinh}[2(c+d x)]\right)\Big/\left((a+b)^2\left(a+2 b+a \operatorname{Cosh}[2(c+d x)]\right)^2\right)\right)\right)\Big/\left(16384\, b^{5/2} d\left(a+b \operatorname{Sech}[c+d x]^2\right)^3\right)+$$

$$\left(\left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3 \operatorname{Sech}[c+d x]^6\left(-\frac{3 a(a+2 b) \operatorname{ArcTanh}\left[\frac{\sqrt{b} \operatorname{Tanh}[c+d x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}+\left(\sqrt{b}\left(3 a^3+14 a^2 b+24 a b^2+16 b^3+a\left(3 a^2+4 a b+4 b^2\right) \operatorname{Cosh}[2(c+d x)]\right) \operatorname{Sinh}[2(c+d x)]\right)\Big/\left((a+b)^2\left(a+2 b+a \operatorname{Cosh}[2(c+d x)]\right)^2\right)\right)\right)\Big/$$

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

$$3\left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3 \operatorname{Sech}[c+d x]^6$$

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

$$\left(-\frac{\mathrm{i} \operatorname{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}+\frac{\mathrm{i} \operatorname{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}\right)$$

$$\left.\left(-a \operatorname{Sinh}[d x]-2 b \operatorname{Sinh}[d x]+a \operatorname{Sinh}[2 c+d x]\right)\right] \operatorname{Cosh}[2 c]\Big)\Big/$$

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

$$\left(-\frac{\mathrm{i} \operatorname{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}+\frac{\mathrm{i} \operatorname{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}\right)$$

$$\left.\left(-a \operatorname{Sinh}[d x]-2 b \operatorname{Sinh}[d x]+a \operatorname{Sinh}[2 c+d x]\right)\right] \operatorname{Sinh}[2 c]\Big)\Big/$$

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

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

$$\frac{1}{512\, (a + b \operatorname{Sech}[c + d x]^2)^3} (a + 2 b + a \operatorname{Cosh}[2 c + 2 d x])^3$$
$$\operatorname{Sech}[c + d x]^6$$
$$\left(\frac{12\, (7 a^2 + 32 a b + 32 b^2)\, x}{a^5} +\right.$$
$$\frac{1}{(a+b)^2} \left(a^7 - 14 a^6 b + 336 a^5 b^2 + 5600 a^4 b^3 + 22\,400 a^3 b^4 + 37\,632 a^2 b^5 + 28\,672 a b^6 + 8192 b^7\right)$$
$$\Bigg(\Bigg(3\, i \operatorname{ArcTan}\Big[\operatorname{Sech}[d x] \left(-\frac{i \operatorname{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c] - b \operatorname{Sinh}[4 c]}} +\right.$$
$$\left.\frac{i \operatorname{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c] - b \operatorname{Sinh}[4 c]}}\right) (-a \operatorname{Sinh}[d x] - 2 b \operatorname{Sinh}[d x] +$$
$$a \operatorname{Sinh}[2 c + d x])\Big] \operatorname{Cosh}[2 c]\Bigg) \Big/ \left(64\, a^5\, b^2 \sqrt{a+b}\; d \sqrt{b \operatorname{Cosh}[4 c] - b \operatorname{Sinh}[4 c]}\right) -$$
$$\Bigg(3\, i \operatorname{ArcTan}\Big[\operatorname{Sech}[d x] \left(-\frac{i \operatorname{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c] - b \operatorname{Sinh}[4 c]}} +\right.$$
$$\left.\frac{i \operatorname{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c] - b \operatorname{Sinh}[4 c]}}\right) (-a \operatorname{Sinh}[d x] - 2 b \operatorname{Sinh}[d x] + a \operatorname{Sinh}[$$
$$2 c + d x])\Big] \operatorname{Sinh}[2 c]\Bigg) \Big/ \left(64\, a^5\, b^2 \sqrt{a+b}\; d \sqrt{b \operatorname{Cosh}[4 c] - b \operatorname{Sinh}[4 c]}\right)\Bigg) +$$

$$\frac{1}{16\, a^5\, b\, (a+b)\, d\, (a + 2 b + a \operatorname{Cosh}[2 c + 2 d x])^2} \operatorname{Sech}[2 c] \big(-a^6 \operatorname{Sinh}[2 c] - 52\, a^5\, b \operatorname{Sinh}[2 c] -$$
$$500\, a^4\, b^2 \operatorname{Sinh}[2 c] - 1920\, a^3\, b^3 \operatorname{Sinh}[2 c] - 3520\, a^2\, b^4 \operatorname{Sinh}[2 c] - 3072\, a\, b^5 \operatorname{Sinh}[2 c] -$$
$$1024\, b^6 \operatorname{Sinh}[2 c] + a^6 \operatorname{Sinh}[2 d x] + 50\, a^5\, b \operatorname{Sinh}[2 d x] + 400\, a^4\, b^2 \operatorname{Sinh}[2 d x] +$$

$$1120\, a^3 b^3 \text{Sinh}[2 d x] + 1280\, a^2 b^4 \text{Sinh}[2 d x] + 512\, a b^5 \text{Sinh}[2 d x]\Big) +$$

$$\frac{1}{64\, a^5 b^2 (a+b)^2 d\, (a + 2 b + a \text{Cosh}[2 c + 2 d x])} \text{Sech}[2 c] \Big(-3 a^7 \text{Sinh}[2 c] + 42 a^6 b \text{Sinh}[2 c] + 2192 a^5 b^2 \text{Sinh}[2 c] + 16480 a^4 b^3 \text{Sinh}[2 c] + 51200 a^3 b^4 \text{Sinh}[2 c] + 77824 a^2 b^5 \text{Sinh}[2 c] + 57344 a b^6 \text{Sinh}[2 c] + 16384 b^7 \text{Sinh}[2 c] + 3 a^7 \text{Sinh}[2 d x] - 44 a^6 b \text{Sinh}[2 d x] - 1900 a^5 b^2 \text{Sinh}[2 d x] - 10880 a^4 b^3 \text{Sinh}[2 d x] - 23360 a^3 b^4 \text{Sinh}[2 d x] - 21504 a^2 b^5 \text{Sinh}[2 d x] - 7168 a b^6 \text{Sinh}[2 d x]\Big) +$$

$$(a + 2 b) \left(-\frac{12 \text{Cosh}[2 c + 2 d x]}{a^4 d} - \frac{12 \text{Sinh}[2 c + 2 d x]}{a^4 d}\right) + (a + 2 b) \left(\frac{12 \text{Cosh}[2 c + 2 d x]}{a^4 d} - \frac{12 \text{Sinh}[2 c + 2 d x]}{a^4 d}\right) + \frac{2 \text{Sinh}[4 c + 4 d x]}{a^3 d}\Bigg) +$$

$$\frac{1}{256 \left(a + b \text{Sech}[c + d x]^2\right)^3} (a + 2 b + a \text{Cosh}[2 c + 2 d x])^3 \text{Sech}[c + d x]^6$$

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

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

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

$$\frac{1}{128\, a^4 b^2 (a+b)^2 d\, (a + 2 b + a \text{Cosh}[2 c + 2 d x])^2} \text{Sech}[2 c] \Big(-4608 a^5 b^2 d x \text{Cosh}[2 c] - 30720 a^4 b^3 d x \text{Cosh}[2 c] - 84480 a^3 b^4 d x \text{Cosh}[2 c] - 119808 a^2 b^5 d x \text{Cosh}[2 c] - 86016 a b^6 d x \text{Cosh}[2 c] - 24576 b^7 d x \text{Cosh}[2 c] - 3072 a^5 b^2 d x \text{Cosh}[2 d x] - 18432 a^4 b^3 d x \text{Cosh}[2 d x] - 39936 a^3 b^4 d x \text{Cosh}[2 d x] - 36864 a^2 b^5 d x \text{Cosh}[2 d x] - 12288 a b^6 d x \text{Cosh}[2 d x] - 3072 a^5 b^2 d x \text{Cosh}[4 c + 2 d x] - 18432 a^4 b^3 d x \text{Cosh}[4 c + 2 d x] - 39936 a^3 b^4 d x \text{Cosh}[4 c + 2 d x] - 36864 a^2 b^5 d x \text{Cosh}[4 c + 2 d x] - 12288 a b^6 d x \text{Cosh}[4 c + 2 d x] - 768 a^5 b^2 d x \text{Cosh}[2 c + 4 d x] - 3072 a^4 b^3 d x \text{Cosh}[2 c + 4 d x] - 3840 a^3 b^4 d x \text{Cosh}[2 c + 4 d x] - 1536 a^2 b^5 d x \text{Cosh}[2 c + 4 d x] - 768 a^5 b^2 d x \text{Cosh}[6 c + 4 d x] - 3072 a^4 b^3 d x \text{Cosh}[6 c + 4 d x] - 3840 a^3 b^4 d x \text{Cosh}[6 c + 4 d x] - 1536 a^2 b^5 d x \text{Cosh}[6 c + 4 d x] + 9 a^7 \text{Sinh}[2 c] - 54 a^6 b \text{Sinh}[2 c] - 2392 a^5 b^2 \text{Sinh}[2 c] - 13968 a^4 b^3 \text{Sinh}[2 c] -$$

$$36480\, a^3 b^4 \,\text{Sinh}[2 c] - 50432\, a^2 b^5 \,\text{Sinh}[2 c] - 35840\, a\, b^6 \,\text{Sinh}[2 c] - 10240\, b^7 \,\text{Sinh}[2 c] - 9 a^7 \,\text{Sinh}[2 d x] + 56 a^6 b \,\text{Sinh}[2 d x] + 2552 a^5 b^2 \,\text{Sinh}[2 d x] + 13184 a^4 b^3 \,\text{Sinh}[2 d x] + 27072 a^3 b^4 \,\text{Sinh}[2 d x] + 24576 a^2 b^5 \,\text{Sinh}[2 d x] + 8192 a b^6 \,\text{Sinh}[2 d x] + 3 a^7 \,\text{Sinh}[4 c + 2 d x] - 24 a^6 b \,\text{Sinh}[4 c + 2 d x] - 600 a^5 b^2 \,\text{Sinh}[4 c + 2 d x] - 3200 a^4 b^3 \,\text{Sinh}[4 c + 2 d x] - 6720 a^3 b^4 \,\text{Sinh}[4 c + 2 d x] - 6144 a^2 b^5 \,\text{Sinh}[4 c + 2 d x] - 2048 a b^6 \,\text{Sinh}[4 c + 2 d x] - 3 a^7 \,\text{Sinh}[2 c + 4 d x] + 26 a^6 b \,\text{Sinh}[2 c + 4 d x] + 992 a^5 b^2 \,\text{Sinh}[2 c + 4 d x] + 3648 a^4 b^3 \,\text{Sinh}[2 c + 4 d x] + 4480 a^3 b^4 \,\text{Sinh}[2 c + 4 d x] + 1792 a^2 b^5 \,\text{Sinh}[2 c + 4 d x] + 256 a^5 b^2 \,\text{Sinh}[6 c + 4 d x] + 1024 a^4 b^3 \,\text{Sinh}[6 c + 4 d x] + 1280 a^3 b^4 \,\text{Sinh}[6 c + 4 d x] + 512 a^2 b^5 \,\text{Sinh}[6 c + 4 d x] + 64 a^5 b^2 \,\text{Sinh}[4 c + 6 d x] + 128 a^4 b^3 \,\text{Sinh}[4 c + 6 d x] + 64 a^3 b^4 \,\text{Sinh}[4 c + 6 d x] + 64 a^5 b^2 \,\text{Sinh}[8 c + 6 d x] + 128 a^4 b^3 \,\text{Sinh}[8 c + 6 d x] + 64 a^3 b^4 \,\text{Sinh}[8 c + 6 d x]\Big) -$$

$$\frac{1}{8192\, b^2 (a+b)^2 d \left(a + b\,\text{Sech}[c+d x]^2\right)^3} \left(a + 2 b + a\,\text{Cosh}[2 c + 2 d x]\right)^3 \text{Sech}[c + d x]^6 \Bigg(\Bigg(6 a^2 \,\text{ArcTanh}\Big[\big(\text{Sech}[d x] \left(\text{Cosh}[2 c] - \text{Sinh}[2 c]\right) \left((a + 2 b)\,\text{Sinh}[d x] - a\,\text{Sinh}[2 c + d x]\right)\big) \Big/ \left(2 \sqrt{a+b} \sqrt{b \left(\text{Cosh}[c] - \text{Sinh}[c]\right)^4}\right)\Big] \left(\text{Cosh}[2 c] - \text{Sinh}[2 c]\right)\Bigg) \Big/ \left(\sqrt{a+b} \sqrt{b \left(\text{Cosh}[c] - \text{Sinh}[c]\right)^4}\right) + \Big(a\,\text{Sech}[2 c] \big(\left(-9 a^4 - 16 a^3 b + 48 a^2 b^2 + 128 a b^3 + 64 b^4\right) \text{Sinh}[2 d x] + a \left(-3 a^3 + 2 a^2 b + 24 a b^2 + 16 b^3\right) \text{Sinh}\left[2 (c + 2 d x)\right] + \left(3 a^4 - 64 a^2 b^2 - 128 a b^3 - 64 b^4\right) \text{Sinh}[4 c + 2 d x]\big) + \left(9 a^5 + 18 a^4 b - 64 a^3 b^2 - 256 a^2 b^3 - 320 a b^4 - 128 b^5\right) \text{Tanh}[2 c]\Big) \Big/ \left(a^2 \left(a + 2 b + a\,\text{Cosh}\left[2 (c + d x)\right]\right)^2\right)\Bigg)$$

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):

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

Result (type 3, 1364 leaves):

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

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

$$\frac{2\sqrt{b}\,\text{Cosh}[c+dx]\,(3a+10b+3a\,\text{Cosh}[2(c+dx)])}{(a+2b+a\,\text{Cosh}[2(c+dx)])^2}\Bigg)\,(a+2b+a\,\text{Cosh}[2c+2dx])^3$$

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

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

$$\Bigg(-(3a-4b)\,\Bigg(\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(\sqrt{a}-i\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\Big)\,\text{Sinh}[c]\,\text{Tanh}\Big[\frac{dx}{2}\Big]+$$

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

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

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

$$\left(2\sqrt{a}\,\sqrt{b}\,\text{Cosh}[c+dx]\,\left(3a^2+6ab+8b^2+a\,(3a-4b)\,\text{Cosh}[2(c+dx)]\right)\right)\Big/$$

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

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

$$\frac{1}{49152\,a^{9/2}\,b^{5/2}\,d\,\left(a+b\,\text{Sech}[c+dx]^2\right)^3}$$

$$\Bigg(3\,\left(3a^4-40a^3b+720a^2b^2+6720ab^3+8960b^4\right)$$

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

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

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

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

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

$$\Big(2\sqrt{a}\,\sqrt{b}\,\text{Cosh}[c+dx]\,\big(9a^5-90a^4b-10144a^3b^2-48672a^2b^3-85120ab^4-$$

$$53760b^5+a\,\left(9a^4-120a^3b-12432a^2b^2-47936ab^3-44800b^4\right)\,\text{Cosh}[2(c+dx)]-$$

$$128a^2b^2\,(15a+28b)\,\text{Cosh}[4(c+dx)]+128a^3b^2\,\text{Cosh}[6(c+dx)]\big)\Big)\Big/$$

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

$$\frac{1}{16384\, a^{7/2}\, d\, \left(a + b\, \text{Sech}[c + d\, x]^2\right)^3} 3 \left(a + 2\, b + a\, \text{Cosh}[2\, c + 2\, d\, x]\right)^3 \text{Sech}[c + d\, x]^6 \left(-\frac{1}{b^{5/2}} 3 \left(a^3 - 8\, a^2\, b + 80\, a\, b^2 + 320\, b^3\right) \text{ArcTan}\left[\frac{1}{\sqrt{b}} \left(\left(\sqrt{a} - i \sqrt{a + b} \sqrt{\left(\text{Cosh}[c] - \text{Sinh}[c]\right)^2}\right) \text{Sinh}[c]\, \text{Tanh}\left[\frac{d\, x}{2}\right] + \text{Cosh}[c] \left(\sqrt{a} - i \sqrt{a + b} \sqrt{\left(\text{Cosh}[c] - \text{Sinh}[c]\right)^2}\, \text{Tanh}\left[\frac{d\, x}{2}\right]\right)\right)\right] - \frac{1}{b^{5/2}} 3 \left(a^3 - 8\, a^2\, b + 80\, a\, b^2 + 320\, b^3\right) \text{ArcTan}\left[\frac{1}{\sqrt{b}} \left(\left(\sqrt{a} + i \sqrt{a + b} \sqrt{\left(\text{Cosh}[c] - \text{Sinh}[c]\right)^2}\right) \text{Sinh}[c]\, \text{Tanh}\left[\frac{d\, x}{2}\right] + \text{Cosh}[c] \left(\sqrt{a} + i \sqrt{a + b} \sqrt{\left(\text{Cosh}[c] - \text{Sinh}[c]\right)^2}\, \text{Tanh}\left[\frac{d\, x}{2}\right]\right)\right)\right] + 512 \sqrt{a}\, \text{Cosh}[c]\, \text{Cosh}[d\, x] - \frac{8 \sqrt{a} \left(a^3 + 24\, a^2\, b + 80\, a\, b^2 + 64\, b^3\right) \text{Cosh}[c + d\, x]}{b \left(a + 2\, b + a\, \text{Cosh}\left[2 \left(c + d\, x\right)\right]\right)^2} - \frac{2 \sqrt{a} \left(3\, a^3 - 24\, a^2\, b - 400\, a\, b^2 - 576\, b^3\right) \text{Cosh}[c + d\, x]}{b^2 \left(a + 2\, b + a\, \text{Cosh}\left[2 \left(c + d\, x\right)\right]\right)} + 512 \sqrt{a}\, \text{Sinh}[c]\, \text{Sinh}[d\, x]\right)$$

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

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

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

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

Result (type 3, 3106 leaves):

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

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

$$\left(\sqrt{b}\ \left(3 a^3+14 a^2 b+24 a b^2+16 b^3+a\left(3 a^2+4 a b+4 b^2\right) \text{Cosh}[2(c+d x)]\right)\right.$$

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

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

$$(a+2 b+a \text{Cosh}[2 c+2 d x])^3$$

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

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

$$\left(-\frac{\mathbb{i} \text{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}+\frac{\mathbb{i} \text{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}\right)$$

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

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

$$\left(-\frac{\mathbb{i} \text{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}+\frac{\mathbb{i} \text{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}\right)$$

$$\left.\left.(-a \text{Sinh}[d x]-2 b \text{Sinh}[d x]+a \text{Sinh}[2 c+d x])\right] \text{Sinh}[2 c]\right) \Big/$$

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

$$\frac{1}{128 a^3 b^2 (a+b)^2 d (a+2 b+a \text{Cosh}[2 c+2 d x])^2} \text{Sech}[2 c]$$

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

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

$$
\begin{aligned}
&\text{Sech}[c+d\,x]^6\\
&\Bigg(\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)\\
&\quad\Bigg(-\Bigg(\Bigg(3\,i\,\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)\left(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x]\right)\Big]\,\text{Cosh}[2\,c]\Bigg)\Big/\left(64\,a^4\,b^2\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)\Bigg)+\\
&\quad\Bigg(3\,i\,\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)\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)\Big/\left(64\,a^4\,b^2\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)\Bigg)+\\
&\quad\frac{1}{128\,a^4\,b^2\,(a+b)^2\,d\,(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])^2}\,\text{Sech}[2\,c]\,\Big(-4608\,a^5\,b^2\,d\,x\,\text{Cosh}[2\,c]-\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]+\\
&\qquad 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]+\\
&\qquad 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]-\\
&\qquad 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]-\\
&\qquad 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]+\\
&\qquad 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]+\\
&\qquad 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]+\\
&\qquad 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]+\\
&\qquad 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]+\\
&\qquad 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}{4096\,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\\
&\Bigg(\Bigg(6\,a^2\,\text{ArcTanh}\Big[\left(\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)\right)\Big/
\end{aligned}
$$

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

$$\Big(a\,\text{Sech}[2c]\,\Big(\big(-9a^4-16a^3b+48a^2b^2+128ab^3+64b^4\big)\,\text{Sinh}[2dx]+a\,\big(-3a^3+2a^2b+24ab^2+16b^3\big)\,\text{Sinh}[2\,(c+2dx)]+\big(3a^4-64a^2b^2-128ab^3-64b^4\big)\,\text{Sinh}[4c+2dx]\Big)+\big(9a^5+18a^4b-64a^3b^2-256a^2b^3-320ab^4-128b^5\big)\,\text{Tanh}[2c]\Big)\Big/\Big(a^2\,(a+2b+a\,\text{Cosh}[2\,(c+dx)])^2\Big)\Big)$$

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

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

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

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

Result (type 3, 1272 leaves):

$$\frac{1}{4096\,a^{5/2}b^{5/2}d\,(a+b\,\text{Sech}[c+dx]^2)^3}\,5\,\Bigg(3\,(a^2-4ab+16b^2)\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(\sqrt{a}-i\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\Big)\,\text{Sinh}[c]\,\text{Tanh}\Big[\frac{dx}{2}\Big]+\text{Cosh}[c]\,\Big(\sqrt{a}-i\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\Big[\frac{dx}{2}\Big]\Big)\Big)\Big]+$$

$$3\,(a^2-4ab+16b^2)\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(\sqrt{a}+i\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\Big)\,\text{Sinh}[c]\,\text{Tanh}\Big[\frac{dx}{2}\Big]+\text{Cosh}[c]\,\Big(\sqrt{a}+i\sqrt{a+b}\,\sqrt{(\text{Cosh}[c]-\text{Sinh}[c])^2}\,\text{Tanh}\Big[\frac{dx}{2}\Big]\Big)\Big)\Big]+$$

$$\frac{8\sqrt{a}\,b^{3/2}\,(a^2+12ab+16b^2)\,\text{Cosh}[c+dx]}{(a+2b+a\,\text{Cosh}[2\,(c+dx)])^2}+\frac{2\sqrt{a}\,\sqrt{b}\,(3a^2-12ab-80b^2)\,\text{Cosh}[c+dx]}{a+2b+a\,\text{Cosh}[2\,(c+dx)]}\Bigg)$$

$$(a+2b+a\,\text{Cosh}[2c+2dx])^3\,\text{Sech}[c+dx]^6+\Bigg(5\,\Bigg(\frac{1}{\sqrt{a}}\,3\,\Bigg(\text{ArcTan}\Big[\frac{\sqrt{a}-i\sqrt{a+b}\,\text{Tanh}\big[\frac{1}{2}(c+dx)\big]}{\sqrt{b}}\Big]+\text{ArcTan}\Big[\frac{\sqrt{a}+i\sqrt{a+b}\,\text{Tanh}\big[\frac{1}{2}(c+dx)\big]}{\sqrt{b}}\Big]\Bigg)+$$

$$\left.\frac{2\sqrt{b}\,\text{Cosh}[c+d\,x]\,\left(3\,a+10\,b+3\,a\,\text{Cosh}\left[2\,\left(c+d\,x\right)\right]\right)}{\left(a+2\,b+a\,\text{Cosh}\left[2\,\left(c+d\,x\right)\right]\right)^2}\right)$$

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

$$\left(4096\,b^{5/2}\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3\right)+\frac{1}{4096\,a^{3/2}\,b^{5/2}\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3}$$

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

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

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

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

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

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

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

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

$$\left(-\frac{1}{b^{5/2}}3\,\left(a^3-8\,a^2\,b+80\,a\,b^2+320\,b^3\right)\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}-\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\right)\right.\right.\right.$$

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

$$\frac{1}{b^{5/2}}3\,\left(a^3-8\,a^2\,b+80\,a\,b^2+320\,b^3\right)\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(\sqrt{a}+\mathbb{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cosh}[c]-\text{Sinh}[c]\right)^2}\right)\right.\right.$$

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

$$512\,\sqrt{a}\,\text{Cosh}[c]\,\text{Cosh}[d\,x]-\frac{8\,\sqrt{a}\,\left(a^3+24\,a^2\,b+80\,a\,b^2+64\,b^3\right)\,\text{Cosh}[c+d\,x]}{b\,\left(a+2\,b+a\,\text{Cosh}\left[2\,\left(c+d\,x\right)\right]\right)^2}-$$

$$\left.\frac{2\,\sqrt{a}\,\left(3\,a^3-24\,a^2\,b-400\,a\,b^2-576\,b^3\right)\,\text{Cosh}[c+d\,x]}{b^2\,\left(a+2\,b+a\,\text{Cosh}\left[2\,\left(c+d\,x\right)\right]\right)}+512\,\sqrt{a}\,\text{Sinh}[c]\,\text{Sinh}[d\,x]\right)$$

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

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

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

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

Result (type 3, 440 leaves):

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

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):

$$\Big((a+2b+a\,\text{Cosh}[2c+2dx])^3\,\text{Sech}[c+dx]^6\Big(-\Big(\Big(15\,\mathrm{i}\,b\,\text{ArcTan}\Big[\text{Sech}[dx]\Big(-\frac{\mathrm{i}\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{\mathrm{i}\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\Big)(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx])\Big]\,\text{Cosh}[2c]\Big)\Big/\Big(64\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\Big)\Big)+\Big(15\,\mathrm{i}\,b\,\text{ArcTan}\Big[\text{Sech}[dx]\Big(-\frac{\mathrm{i}\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{\mathrm{i}\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\Big)(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx])\Big]\,\text{Sinh}[2c]\Big)\Big/\Big(64\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\Big)\Big)\Big)\Big/\Big((a+b)^3\,(a+b\,\text{Sech}[c+dx]^2)^3\Big)+\frac{1}{512\,a^2\,(a+b)^3\,d\,(a+b\,\text{Sech}[c+dx]^2)^3}$$

$$(a+2b+a\,\text{Cosh}[2c+2dx])\,\text{Csch}[c]\,\text{Csch}[c+dx]\,\text{Sech}[2c]\,\text{Sech}[c+dx]^6\,\big(-32a^4\,\text{Sinh}[dx]-64a^3b\,\text{Sinh}[dx]+22a^2b^2\,\text{Sinh}[dx]+80ab^3\,\text{Sinh}[dx]+16b^4\,\text{Sinh}[dx]+32a^4\,\text{Sinh}[3dx]+46a^3b\,\text{Sinh}[3dx]-54a^2b^2\,\text{Sinh}[3dx]-8ab^3\,\text{Sinh}[3dx]-48a^4\,\text{Sinh}[2c-dx]-128a^3b\,\text{Sinh}[2c-dx]-106a^2b^2\,\text{Sinh}[2c-dx]+80ab^3\,\text{Sinh}[2c-dx]+16b^4\,\text{Sinh}[2c-dx]+48a^4\,\text{Sinh}[2c+dx]+146a^3b\,\text{Sinh}[2c+dx]+182a^2b^2\,\text{Sinh}[2c+dx]+80ab^3\,\text{Sinh}[2c+dx]+16b^4\,\text{Sinh}[2c+dx]-32a^4\,\text{Sinh}[4c+dx]-82a^3b\,\text{Sinh}[4c+dx]-54a^2b^2\,\text{Sinh}[4c+dx]-80ab^3\,\text{Sinh}[4c+dx]-16b^4\,\text{Sinh}[4c+dx]-8a^4\,\text{Sinh}[2c+3dx]+18a^3b\,\text{Sinh}[2c+3dx]+54a^2b^2\,\text{Sinh}[2c+3dx]+8ab^3\,\text{Sinh}[2c+3dx]+32a^4\,\text{Sinh}[4c+3dx]+73a^3b\,\text{Sinh}[4c+3dx]+24a^2b^2\,\text{Sinh}[4c+3dx]+8ab^3\,\text{Sinh}[4c+3dx]-8a^4\,\text{Sinh}[6c+3dx]-9a^3b\,\text{Sinh}[6c+3dx]-24a^2b^2\,\text{Sinh}[6c+3dx]-8ab^3\,\text{Sinh}[6c+3dx]+8a^4\,\text{Sinh}[2c+5dx]-9a^3b\,\text{Sinh}[2c+5dx]-2a^2b^2\,\text{Sinh}[2c+5dx]+9a^3b\,\text{Sinh}[4c+5dx]+2a^2b^2\,\text{Sinh}[4c+5dx]+8a^4\,\text{Sinh}[6c+5dx]\big)$$

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

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

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):

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

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) :

$$\left((3a-4b)\,(a+2b+a\,\text{Cosh}[2c+2dx])^3\,\text{Sech}[c+dx]^6\left(\left(5\,i\,b\,\text{ArcTan}\Big[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx])\Big]\,\text{Cosh}[2c]\right)\Big/\left(64\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)-\left(5\,i\,b\,\text{ArcTan}\Big[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx])\Big]\,\text{Sinh}[2c]\right)\Big/\left(64\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\right)\right)\Big/\left((a+b)^4\,(a+b\,\text{Sech}[c+dx]^2)^3\right)+\frac{1}{6144\,a\,(a+b)^4\,d\,(a+b\,\text{Sech}[c+dx]^2)^3}$$

$$(a+2b+a\,\text{Cosh}[2c+2dx])\,\text{Csch}[c]\,\text{Csch}[c+dx]^3\,\text{Sech}[2c]\,\text{Sech}[c+dx]^6\,(-176a^4\,\text{Sinh}[dx]-488a^3b\,\text{Sinh}[dx]-252a^2b^2\,\text{Sinh}[dx]-504ab^3\,\text{Sinh}[dx]-144b^4\,\text{Sinh}[dx]+96a^4\,\text{Sinh}[3dx]+71a^3b\,\text{Sinh}[3dx]-344a^2b^2\,\text{Sinh}[3dx]+1208ab^3\,\text{Sinh}[3dx]-48b^4\,\text{Sinh}[3dx]-224a^4\,\text{Sinh}[2c-dx]-576a^3b\,\text{Sinh}[2c-dx]-124a^2b^2\,\text{Sinh}[2c-dx]+2184ab^3\,\text{Sinh}[2c-dx]-144b^4\,\text{Sinh}[2c-dx]+224a^4\,\text{Sinh}[2c+dx]+657a^3b\,\text{Sinh}[2c+dx]+538a^2b^2\,\text{Sinh}[2c+dx]-984ab^3\,\text{Sinh}[2c+dx]-144b^4\,\text{Sinh}[2c+dx]-176a^4\,\text{Sinh}[4c+dx]-569a^3b\,\text{Sinh}[4c+dx]-666a^2b^2\,\text{Sinh}[4c+dx]-1704ab^3\,\text{Sinh}[4c+dx]+144b^4\,\text{Sinh}[4c+dx]-48a^4\,\text{Sinh}[2c+3dx]-111a^3b\,\text{Sinh}[2c+3dx]-360a^2b^2\,\text{Sinh}[2c+3dx]-312ab^3\,\text{Sinh}[2c+3dx]+48b^4\,\text{Sinh}[2c+3dx]+96a^4\,\text{Sinh}[4c+3dx]+152a^3b\,\text{Sinh}[4c+3dx]-146a^2b^2\,\text{Sinh}[4c+3dx]+728ab^3\,\text{Sinh}[4c+3dx]+48b^4\,\text{Sinh}[4c+3dx]-48a^4\,\text{Sinh}[6c+3dx]-192a^3b\,\text{Sinh}[6c+3dx]-558a^2b^2\,\text{Sinh}[6c+3dx]+168ab^3\,\text{Sinh}[6c+3dx]-48b^4\,\text{Sinh}[6c+3dx]-16a^4\,\text{Sinh}[2c+5dx]+598a^2b^2\,\text{Sinh}[2c+5dx]-48ab^3\,\text{Sinh}[2c+5dx]-72a^3b\,\text{Sinh}[4c+5dx]-150a^2b^2\,\text{Sinh}[4c+5dx]+48ab^3\,\text{Sinh}[4c+5dx]-16a^4\,\text{Sinh}[6c+5dx]-27a^3b\,\text{Sinh}[6c+5dx]+388a^2b^2\,\text{Sinh}[6c+5dx]-45a^3b\,\text{Sinh}[8c+5dx]+60a^2b^2\,\text{Sinh}[8c+5dx]-16a^4\,\text{Sinh}[4c+7dx]+83a^3b\,\text{Sinh}[4c+7dx]-6a^2b^2\,\text{Sinh}[4c+7dx]-27a^3b\,\text{Sinh}[6c+7dx]+6a^2b^2\,\text{Sinh}[6c+7dx]-16a^4\,\text{Sinh}[8c+7dx]+56a^3b\,\text{Sinh}[8c+7dx])$$

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

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

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

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

Result (type 3, 116 leaves):

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

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

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

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

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

Result (type 3, 190 leaves):

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

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

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

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

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

Result (type 3, 189 leaves):

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

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):

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

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):

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

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):

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

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):

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

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):

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

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

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

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

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

Result (type 3, 182 leaves):

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

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

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

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

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

Result (type 3, 213 leaves):

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

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

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

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

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

Result (type 3, 214 leaves):

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

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

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

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

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

Result (type 3, 234 leaves):

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

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):

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

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):

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

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

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

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

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

Result (type 3, 282 leaves):

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

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

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

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):

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

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

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

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

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

Result (type 3, 1144 leaves):

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

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

$$\left(\left(4 a^3 + 5 a^2 b\right) (a + 2 b + a \operatorname{Cosh}[2 c + 2 d x])^2 \operatorname{Sech}[c + d x]^4 \left(-\left(\left(\operatorname{ArcTan}\left[\operatorname{Csch}[c + d x] \left(\frac{\sqrt{a + b} \operatorname{Cosh}[c] \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}}{\sqrt{a}} + \frac{\sqrt{a + b} \operatorname{Sinh}[c] \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}}{\sqrt{a}}\right)\right] \operatorname{Cosh}[c]\right) \Big/ \left(16 \sqrt{a} b^3 \sqrt{a + b} d \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}\right)\right) + \left(\operatorname{ArcTan}\left[\operatorname{Csch}[c + d x] \left(\frac{\sqrt{a + b} \operatorname{Cosh}[c] \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}}{\sqrt{a}} + \frac{\sqrt{a + b} \operatorname{Sinh}[c] \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}}{\sqrt{a}}\right)\right] \operatorname{Sinh}[c]\right) \Big/ \left(16 \sqrt{a} b^3 \sqrt{a + b} d \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}\right)\right)\right) \Big/ \left((a + b) \left(a + b \operatorname{Sech}[c + d x]^2\right)^2\right) +$$

$$\left((4 a + 5 b) (a + 2 b + a \operatorname{Cosh}[2 c + 2 d x])^2 \operatorname{Sech}[c + d x]^4 \left(-\left(\left(a^{3/2} \operatorname{ArcTan}\left[\operatorname{Csch}[c + d x] \left(\frac{\sqrt{a + b} \operatorname{Cosh}[c] \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}}{\sqrt{a}} + \frac{\sqrt{a + b} \operatorname{Sinh}[c] \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}}{\sqrt{a}}\right)\right] \operatorname{Cosh}[c]\right) \Big/ \left(16 b^3 \sqrt{a + b} d \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}\right)\right) + \left(a^{3/2} \operatorname{ArcTan}\left[\operatorname{Csch}[c + d x] \left(\frac{\sqrt{a + b} \operatorname{Cosh}[c] \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}}{\sqrt{a}} + \frac{\sqrt{a + b} \operatorname{Sinh}[c] \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}}{\sqrt{a}}\right)\right] \operatorname{Sinh}[c]\right) \Big/ \left(16 b^3 \sqrt{a + b} d \sqrt{\operatorname{Cosh}[2 c] - \operatorname{Sinh}[2 c]}\right)\right)\right) \Big/ \left((a + b) \left(a + b \operatorname{Sech}[c + d x]^2\right)^2\right) +$$

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

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

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

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

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

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

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

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

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

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

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

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

Result (type 3, 258 leaves):

$$\left((a+2 b+a \operatorname{Cosh}[2(c+d x)]) \operatorname{Sech}[c+d x]^6\right.$$

$$\left(\left(3 \operatorname{ArcTanh}\left[(\operatorname{Sech}[d x](\operatorname{Cosh}[2 c]-\operatorname{Sinh}[2 c])((a+2 b) \operatorname{Sinh}[d x]-a \operatorname{Sinh}[2 c+d x]))\right.\right.\right. \Big/$$

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

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

$$\frac{4 b (a+b) \operatorname{Sech}[2 c]((a+2 b) \operatorname{Sinh}[2 c]-a \operatorname{Sinh}[2 d x])}{a^2}-\frac{1}{a^2}(a+2 b+a \operatorname{Cosh}[2(c+d x)])$$

$$\left.\left.\operatorname{Sech}[2 c]\left(\left(5 a^2+16 a b+8 b^2\right) \operatorname{Sinh}[2 c]-a(5 a+2 b) \operatorname{Sinh}[2 d x]\right)\right)\right) \Big/$$

$$\left(64 (a+b)^2 d\left(a+b \operatorname{Sech}[c+d x]^2\right)^3\right)$$

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):

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

Result (type 3, 507 leaves):

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

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

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

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

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

Result (type 3, 1120 leaves):

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\left.\left.\frac{i\,\mathrm{Log}[a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]]\,\mathrm{Sinh}[c]}{256\,\sqrt{a}\,b^3\,\sqrt{a+b}\,d\,\sqrt{\mathrm{Cosh}[2\,c]-\mathrm{Sinh}[2\,c]}}\right)\right)\Big/$$
$$\left((a+b)^2\,\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^3\right)+\Bigg(\left(8\,a^2+20\,a\,b+15\,b^2\right)$$
$$(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x])^3$$
$$\mathrm{Sech}[c+d\,x]^6$$
$$\left(\frac{i\,\sqrt{a}\,\mathrm{Cosh}[c]\,\mathrm{Log}[a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]]}{256\,b^3\,\sqrt{a+b}\,d\,\sqrt{\mathrm{Cosh}[2\,c]-\mathrm{Sinh}[2\,c]}}-\right.$$
$$\left.\left.\frac{i\,\sqrt{a}\,\mathrm{Log}[a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x]]\,\mathrm{Sinh}[c]}{256\,b^3\,\sqrt{a+b}\,d\,\sqrt{\mathrm{Cosh}[2\,c]-\mathrm{Sinh}[2\,c]}}\right)\right)\Big/$$
$$\left((a+b)^2\,\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^3\right)+\left((a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x])^2\,\mathrm{Sech}[c+d\,x]^6\right.$$
$$\left.\left(-4\,a^2\,\mathrm{Sinh}[c+d\,x]-7\,a\,b\,\mathrm{Sinh}[c+d\,x]\right)\right)\Big/$$
$$\left(32\,b^2\,(a+b)^2\,d\,\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^3\right)-$$
$$\frac{a\,(a+2\,b+a\,\mathrm{Cosh}[2\,c+2\,d\,x])\,\mathrm{Sech}[c+d\,x]^5\,\mathrm{Tanh}[c+d\,x]}{8\,b\,(a+b)\,d\,\left(a+b\,\mathrm{Sech}[c+d\,x]^2\right)^3}$$

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

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

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

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

Result (type 3, 395 leaves):

$$\frac{1}{13\,440\,d}\,\mathrm{Sech}[c]\,\mathrm{Sech}[c+d\,x]^7$$
$$\left(3675\,a^2\,d\,x\,\mathrm{Cosh}[d\,x]+3675\,a^2\,d\,x\,\mathrm{Cosh}[2\,c+d\,x]+2205\,a^2\,d\,x\,\mathrm{Cosh}[2\,c+3\,d\,x]+\right.$$
$$2205\,a^2\,d\,x\,\mathrm{Cosh}[4\,c+3\,d\,x]+735\,a^2\,d\,x\,\mathrm{Cosh}[4\,c+5\,d\,x]+735\,a^2\,d\,x\,\mathrm{Cosh}[6\,c+5\,d\,x]+$$
$$105\,a^2\,d\,x\,\mathrm{Cosh}[6\,c+7\,d\,x]+105\,a^2\,d\,x\,\mathrm{Cosh}[8\,c+7\,d\,x]-5320\,a^2\,\mathrm{Sinh}[d\,x]+$$
$$1680\,a\,b\,\mathrm{Sinh}[d\,x]+840\,b^2\,\mathrm{Sinh}[d\,x]+4480\,a^2\,\mathrm{Sinh}[2\,c+d\,x]-1260\,a\,b\,\mathrm{Sinh}[2\,c+d\,x]+$$
$$420\,b^2\,\mathrm{Sinh}[2\,c+d\,x]-3780\,a^2\,\mathrm{Sinh}[2\,c+3\,d\,x]+924\,a\,b\,\mathrm{Sinh}[2\,c+3\,d\,x]-$$
$$168\,b^2\,\mathrm{Sinh}[2\,c+3\,d\,x]+2100\,a^2\,\mathrm{Sinh}[4\,c+3\,d\,x]-840\,a\,b\,\mathrm{Sinh}[4\,c+3\,d\,x]-$$
$$420\,b^2\,\mathrm{Sinh}[4\,c+3\,d\,x]-1540\,a^2\,\mathrm{Sinh}[4\,c+5\,d\,x]+168\,a\,b\,\mathrm{Sinh}[4\,c+5\,d\,x]+$$
$$84\,b^2\,\mathrm{Sinh}[4\,c+5\,d\,x]+420\,a^2\,\mathrm{Sinh}[6\,c+5\,d\,x]-420\,a\,b\,\mathrm{Sinh}[6\,c+5\,d\,x]-$$
$$\left.280\,a^2\,\mathrm{Sinh}[6\,c+7\,d\,x]+84\,a\,b\,\mathrm{Sinh}[6\,c+7\,d\,x]+12\,b^2\,\mathrm{Sinh}[6\,c+7\,d\,x]\right)$$

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

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

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

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

Result (type 3, 281 leaves):

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

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

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

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

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

Result (type 3, 106 leaves):

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

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

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

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

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

Result (type 3, 82 leaves):

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

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

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

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):

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

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

$$\left(8 \operatorname{Cosh}[c+d x]^2 \operatorname{Sech}[c] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(63 a^2 b \operatorname{Sinh}[c]-72 a b^2 \operatorname{Sinh}[c]+b^3 \operatorname{Sinh}[c]\right)\right) \Big/ \left(105 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3\right)+\left(8 \operatorname{Cosh}[c+d x]^4 \operatorname{Sech}[c] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(105 a^3 \operatorname{Sinh}[c]-378 a^2 b \operatorname{Sinh}[c]+27 a b^2 \operatorname{Sinh}[c]+4 b^3 \operatorname{Sinh}[c]\right)\right) \Big/ \left(315 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3\right)+$$

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

$$\left(8 \operatorname{Sech}[c] \operatorname{Sech}[c+d x] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(27 a b^2 \operatorname{Sinh}[d x]-10 b^3 \operatorname{Sinh}[d x]\right)\right) \Big/ \left(63 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3\right)-\left(8 \operatorname{Cosh}[c+d x]^5 \operatorname{Sech}[c] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(420 a^3 \operatorname{Sinh}[d x]-189 a^2 b \operatorname{Sinh}[d x]-54 a b^2 \operatorname{Sinh}[d x]-8 b^3 \operatorname{Sinh}[d x]\right)\right) \Big/ \left(315 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3\right)+\left(8 \operatorname{Cosh}[c+d x] \operatorname{Sech}[c] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(63 a^2 b \operatorname{Sinh}[d x]-72 a b^2 \operatorname{Sinh}[d x]+b^3 \operatorname{Sinh}[d x]\right)\right) \Big/ \left(105 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3\right)+\left(8 \operatorname{Cosh}[c+d x]^3 \operatorname{Sech}[c] \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \left(105 a^3 \operatorname{Sinh}[d x]-378 a^2 b \operatorname{Sinh}[d x]+27 a b^2 \operatorname{Sinh}[d x]+4 b^3 \operatorname{Sinh}[d x]\right)\right) \Big/ \left(315 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3\right)+\frac{8 b^3 \operatorname{Sech}[c+d x]^2 \left(a+b \operatorname{Sech}[c+d x]^2\right)^3 \operatorname{Tanh}[c]}{9 d \left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3}$$

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):

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

Result (type 3, 479 leaves):

$$\frac{1}{13440\, d} \text{Sech}[c]\, \text{Sech}[c+d x]^7 \Big(3675 a^3 d x \text{Cosh}[d x] + 3675 a^3 d x \text{Cosh}[2 c+d x] + 2205 a^3 d x \text{Cosh}[2 c+3 d x] + 2205 a^3 d x \text{Cosh}[4 c+3 d x] + 735 a^3 d x \text{Cosh}[4 c+5 d x] + 735 a^3 d x \text{Cosh}[6 c+5 d x] + 105 a^3 d x \text{Cosh}[6 c+7 d x] + 105 a^3 d x \text{Cosh}[8 c+7 d x] - 4200 a^3 \text{Sinh}[d x] + 3360 a^2 b \text{Sinh}[d x] + 840 a b^2 \text{Sinh}[d x] - 560 b^3 \text{Sinh}[d x] + 3150 a^3 \text{Sinh}[2 c+d x] - 3990 a^2 b \text{Sinh}[2 c+d x] - 2100 a b^2 \text{Sinh}[2 c+d x] - 1120 b^3 \text{Sinh}[2 c+d x] - 3150 a^3 \text{Sinh}[2 c+3 d x] + 1890 a^2 b \text{Sinh}[2 c+3 d x] + 504 a b^2 \text{Sinh}[2 c+3 d x] + 336 b^3 \text{Sinh}[2 c+3 d x] + 1260 a^3 \text{Sinh}[4 c+3 d x] - 2520 a^2 b \text{Sinh}[4 c+3 d x] - 1260 a b^2 \text{Sinh}[4 c+3 d x] - 1260 a^3 \text{Sinh}[4 c+5 d x] + 840 a^2 b \text{Sinh}[4 c+5 d x] + 588 a b^2 \text{Sinh}[4 c+5 d x] + 112 b^3 \text{Sinh}[4 c+5 d x] + 210 a^3 \text{Sinh}[6 c+5 d x] - 630 a^2 b \text{Sinh}[6 c+5 d x] - 210 a^3 \text{Sinh}[6 c+7 d x] + 210 a^2 b \text{Sinh}[6 c+7 d x] + 84 a b^2 \text{Sinh}[6 c+7 d x] + 16 b^3 \text{Sinh}[6 c+7 d x]\Big)$$

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):

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

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):

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

Result (type 3, 126 leaves):

$$\Big(8 \left(a \text{Cosh}[c+d x]+b \text{Sech}[c+d x]\right)^3 \Big(3 a^3 d x \text{Cosh}[c+d x]^3 - b^3 \text{Sech}[c] \text{Sinh}[d x] + \text{Cosh}[c+d x]^2 \left(3 (a+b)^3 \text{Coth}[c+d x] \text{Csch}[c] - b^2 (9 a+5 b) \text{Sech}[c]\right) \text{Sinh}[d x] - b^3 \text{Cosh}[c+d x] \text{Tanh}[c]\Big)\Big) \Big/ \left(3 d \left(a+2 b+a \text{Cosh}[2 (c+d x)]\right)^3\right)$$

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):

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

Result (type 3, 174 leaves):

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

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):

$$\frac{1}{480 d}\text{Csch}[c]\,\text{Csch}[c+d x]^5\,\big(-150 a^3 d x \text{Cosh}[d x]+150 a^3 d x \text{Cosh}[2 c+d x]+75 a^3 d x \text{Cosh}[2 c+3 d x]-75 a^3 d x \text{Cosh}[4 c+3 d x]-15 a^3 d x \text{Cosh}[4 c+5 d x]+15 a^3 d x \text{Cosh}[6 c+5 d x]+280 a^3 \text{Sinh}[d x]+180 a^2 b \text{Sinh}[d x]+60 a b^2 \text{Sinh}[d x]+160 b^3 \text{Sinh}[d x]+180 a^3 \text{Sinh}[2 c+d x]-180 a b^2 \text{Sinh}[2 c+d x]-140 a^3 \text{Sinh}[2 c+3 d x]+60 a b^2 \text{Sinh}[2 c+3 d x]-80 b^3 \text{Sinh}[2 c+3 d x]-90 a^3 \text{Sinh}[4 c+3 d x]-90 a^2 b \text{Sinh}[4 c+3 d x]+46 a^3 \text{Sinh}[4 c+5 d x]+18 a^2 b \text{Sinh}[4 c+5 d x]-12 a b^2 \text{Sinh}[4 c+5 d x]+16 b^3 \text{Sinh}[4 c+5 d x]\big)$$

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

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

Optimal (type 3, 111 leaves, 4 steps):

$$a^4 x + \frac{b\,(2 a+b)\,(2 a^2+2 a b+b^2)\,\text{Tanh}[c+d x]}{d} - \frac{b^2\,(6 a^2+8 a b+3 b^2)\,\text{Tanh}[c+d x]^3}{3 d} + \frac{b^3\,(4 a+3 b)\,\text{Tanh}[c+d x]^5}{5 d} - \frac{b^4\,\text{Tanh}[c+d x]^7}{7 d}$$

Result (type 3, 455 leaves):

$$\frac{1}{13440 d}\text{Sech}[c]\,\text{Sech}[c+d x]^7\,\big(3675 a^4 d x \text{Cosh}[d x]+3675 a^4 d x \text{Cosh}[2 c+d x]+2205 a^4 d x \text{Cosh}[2 c+3 d x]+2205 a^4 d x \text{Cosh}[4 c+3 d x]+735 a^4 d x \text{Cosh}[4 c+5 d x]+735 a^4 d x \text{Cosh}[6 c+5 d x]+105 a^4 d x \text{Cosh}[6 c+7 d x]+105 a^4 d x \text{Cosh}[8 c+7 d x]+16800 a^3 b \text{Sinh}[d x]+18480 a^2 b^2 \text{Sinh}[d x]+11200 a b^3 \text{Sinh}[d x]+3360 b^4 \text{Sinh}[d x]-12600 a^3 b \text{Sinh}[2 c+d x]-10920 a^2 b^2 \text{Sinh}[2 c+d x]-4480 a b^3 \text{Sinh}[2 c+d x]+12600 a^3 b \text{Sinh}[2 c+3 d x]+15120 a^2 b^2 \text{Sinh}[2 c+3 d x]+9408 a b^3 \text{Sinh}[2 c+3 d x]+2016 b^4 \text{Sinh}[2 c+3 d x]-5040 a^3 b \text{Sinh}[4 c+3 d x]-2520 a^2 b^2 \text{Sinh}[4 c+3 d x]+5040 a^3 b \text{Sinh}[4 c+5 d x]+5880 a^2 b^2 \text{Sinh}[4 c+5 d x]+3136 a b^3 \text{Sinh}[4 c+5 d x]+672 b^4 \text{Sinh}[4 c+5 d x]-840 a^3 b \text{Sinh}[6 c+5 d x]+840 a^3 b \text{Sinh}[6 c+7 d x]+840 a^2 b^2 \text{Sinh}[6 c+7 d x]+448 a b^3 \text{Sinh}[6 c+7 d x]+96 b^4 \text{Sinh}[6 c+7 d x]\big)$$

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

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

Optimal (type 3, 163 leaves, 4 steps):

$$a^5 x + \frac{b\left(5 a^4 + 10 a^3 b + 10 a^2 b^2 + 5 a b^3 + b^4\right) \text{Tanh}[c + d x]}{d} - \frac{b^2\left(10 a^3 + 20 a^2 b + 15 a b^2 + 4 b^3\right) \text{Tanh}[c + d x]^3}{3 d} + \frac{b^3\left(10 a^2 + 15 a b + 6 b^2\right) \text{Tanh}[c + d x]^5}{5 d} - \frac{b^4\left(5 a + 4 b\right) \text{Tanh}[c + d x]^7}{7 d} + \frac{b^5 \text{Tanh}[c + d x]^9}{9 d}$$

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} + \left(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)\right) \Big/ \left(63 d\left(a + 2 b + a \text{Cosh}[2 c + 2 d x]\right)^5\right) + \left(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)\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]^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} + \left(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)\right) \Big/ \left(63 d\left(a + 2 b + a \text{Cosh}[2 c + 2 d x]\right)^5\right) + \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\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):

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

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):

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

Result (type 3, 196 leaves):

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

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):

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

Problem 143: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 172 leaves):

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

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

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

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

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

Result (type 3, 193 leaves):

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

Problem 147: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 87 leaves, 7 steps):

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

Result (type 3, 581 leaves):

$$\frac{x\,(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])\,\text{Sech}[c+d\,x]^2}{2\,a\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)}-\frac{(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])\,\text{Coth}[c]\,\text{Csch}[c+d\,x]^2\,\text{Sech}[c+d\,x]^2}{6\,(a+b)\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)}+$$
$$\Bigg((a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])\,\text{Sech}[c+d\,x]^2\,\Bigg(\Bigg(\Big(i\,b^3\,\text{ArcTan}\Big[\text{Sech}[d\,x]$$
$$\left(-\frac{i\,\text{Cosh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}+\frac{i\,\text{Sinh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}\right)$$
$$(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x])\Big]\,\text{Cosh}[2\,c]\Big)\Big/$$
$$\left(2\,a\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)-\Big(i\,b^3\,\text{ArcTan}\Big[\text{Sech}[d\,x]$$
$$\left(-\frac{i\,\text{Cosh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}+\frac{i\,\text{Sinh}[2\,c]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}}\right)$$
$$(-a\,\text{Sinh}[d\,x]-2\,b\,\text{Sinh}[d\,x]+a\,\text{Sinh}[2\,c+d\,x])\Big]\,\text{Sinh}[2\,c]\Big)\Big/$$
$$\left(2\,a\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)\Bigg)\Bigg)\Bigg/\left((a+b)^2\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)\right)+$$
$$\Big((a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])\,\text{Csch}[c]\,\text{Csch}[c+d\,x]^3\,\text{Sech}[c+d\,x]^2$$
$$\text{Sinh}[d\,x]\Big)\Big/$$
$$\left(6\,(a+b)\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)\right)+$$
$$\Big((a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])\,\text{Csch}[c]\,\text{Csch}[c+d\,x]$$
$$\text{Sech}[c+d\,x]^2\,(4\,a\,\text{Sinh}[d\,x]+7\,b\,\text{Sinh}[d\,x])\Big)\Big/$$
$$\left(6\,(a+b)^2\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)\right)$$

Problem 149: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 91 leaves, 6 steps):

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

Result (type 3, 228 leaves):

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

Problem 151: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 85 leaves, 6 steps):

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

Result (type 3, 326 leaves):

$$\Big((a+2b+a\,\text{Cosh}[2(c+dx)])^2\,\text{Sech}[c+dx]^4\,\Big(\frac{16x}{a^2}-\frac{(a+2b)\,\text{ArcTanh}\Big[\frac{\sqrt{b}\,\text{Tanh}[c+dx]}{\sqrt{a+b}}\Big]}{b^{3/2}\,(a+b)^{3/2}\,d}+\Big((a^3-6a^2b-24ab^2-16b^3)\,\text{ArcTanh}\Big[(\text{Sech}[dx]\,(\text{Cosh}[2c]-\text{Sinh}[2c])\,((a+2b)\,\text{Sinh}[dx]-a\,\text{Sinh}[2c+dx]))\Big/\Big(2\sqrt{a+b}\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\Big)\Big]\,(\text{Cosh}[2c]-\text{Sinh}[2c])\Big)\Big/\Big(a^2b\,(a+b)^{3/2}\,d\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\Big)+\frac{(a^2+8ab+8b^2)\,\text{Sech}[2c]\,((a+2b)\,\text{Sinh}[2c]-a\,\text{Sinh}[2dx])}{a^2b\,(a+b)\,d\,(a+2b+a\,\text{Cosh}[2(c+dx)])}+\frac{a\,\text{Sinh}[2(c+dx)]}{b\,(a+b)\,d\,(a+2b+a\,\text{Cosh}[2(c+dx)])}\Big)\Big)\Big/\Big(64\,(a+b\,\text{Sech}[c+dx]^2)^2\Big)$$

Problem 153: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 93 leaves, 5 steps):

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

Result (type 3, 221 leaves):

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

Problem 155: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 121 leaves, 7 steps):

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

Result (type 3, 268 leaves):

$$\left((a+2b+a\operatorname{Cosh}[2(c+dx)])\operatorname{Sech}[c+dx]^4\right.$$
$$\left(\frac{2x(a+2b+a\operatorname{Cosh}[2(c+dx)])}{a^2}-\left(b^2(5a+2b)\operatorname{ArcTanh}\left[\right.\right.\right.$$
$$(\operatorname{Sech}[dx](\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c])((a+2b)\operatorname{Sinh}[dx]-a\operatorname{Sinh}[2c+dx]))\Big/$$
$$\left.\left(2\sqrt{a+b}\sqrt{b(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^4}\right)\right](a+2b+a\operatorname{Cosh}[2(c+dx)])$$
$$\left.(\operatorname{Cosh}[2c]-\operatorname{Sinh}[2c])\right)\Big/\left(a^2(a+b)^{5/2}d\sqrt{b(\operatorname{Cosh}[c]-\operatorname{Sinh}[c])^4}\right)+$$
$$\frac{2(a+2b+a\operatorname{Cosh}[2(c+dx)])\operatorname{Csch}[c]\operatorname{Csch}[c+dx]\operatorname{Sinh}[dx]}{(a+b)^2d}+$$
$$\left.\left.\frac{b^2\operatorname{Sech}[2c]((a+2b)\operatorname{Sinh}[2c]-a\operatorname{Sinh}[2dx])}{a^2(a+b)^2d}\right)\right)\Big/\left(8\left(a+b\operatorname{Sech}[c+dx]^2\right)^2\right)$$

Problem 157: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 161 leaves, 8 steps):

$$\frac{x}{a^2}-\frac{b^{5/2}(7a+2b)\operatorname{ArcTanh}\left[\frac{\sqrt{b}\operatorname{Tanh}[c+dx]}{\sqrt{a+b}}\right]}{2a^2(a+b)^{7/2}d}-\frac{\left(2a^2+6ab-b^2\right)\operatorname{Coth}[c+dx]}{2a(a+b)^3d}-$$
$$\frac{(2a-3b)\operatorname{Coth}[c+dx]^3}{6a(a+b)^2d}-\frac{b\operatorname{Coth}[c+dx]^3}{2a(a+b)d\left(a+b-b\operatorname{Tanh}[c+dx]^2\right)}$$

Result (type 3, 685 leaves):

$$\frac{x\,(a+2b+a\,\mathrm{Cosh}[2c+2dx])^2\,\mathrm{Sech}[c+dx]^4}{4a^2\,(a+b\,\mathrm{Sech}[c+dx]^2)^2}-\frac{(a+2b+a\,\mathrm{Cosh}[2c+2dx])^2\,\mathrm{Coth}[c]\,\mathrm{Csch}[c+dx]^2\,\mathrm{Sech}[c+dx]^4}{12\,(a+b)^2\,d\,(a+b\,\mathrm{Sech}[c+dx]^2)^2}+$$

$$\Bigg((7a+2b)\,(a+2b+a\,\mathrm{Cosh}[2c+2dx])^2\,\mathrm{Sech}[c+dx]^4\,\Bigg(\Bigg(\mathrm{i}\,b^3\,\mathrm{ArcTan}\Big[\mathrm{Sech}[dx]\left(-\frac{\mathrm{i}\,\mathrm{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4c]-b\,\mathrm{Sinh}[4c]}}+\frac{\mathrm{i}\,\mathrm{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cosh}[4c]-b\,\mathrm{Sinh}[4c]}}\right)(-a\,\mathrm{Sinh}[dx]-2b\,\mathrm{Sinh}[dx]+a\,\mathrm{Sinh}[2c+dx])\Big]\,\mathrm{Cosh}[2c]\Bigg)\Big/$$

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

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

$$\left((a+2b+a\,\mathrm{Cosh}[2c+2dx])^2\,\mathrm{Csch}[c]\,\mathrm{Csch}[c+dx]^3\,\mathrm{Sech}[c+dx]^4\,\mathrm{Sinh}[dx]\right)\Big/$$
$$\left(12\,(a+b)^2\,d\,(a+b\,\mathrm{Sech}[c+dx]^2)^2\right)+$$
$$\left((a+2b+a\,\mathrm{Cosh}[2c+2dx])^2\,\mathrm{Csch}[c]\,\mathrm{Csch}[c+dx]\,\mathrm{Sech}[c+dx]^4\,(2a\,\mathrm{Sinh}[dx]+5b\,\mathrm{Sinh}[dx])\right)\Big/$$
$$\left(6\,(a+b)^3\,d\,(a+b\,\mathrm{Sech}[c+dx]^2)^2\right)+$$
$$\left((a+2b+a\,\mathrm{Cosh}[2c+2dx])\,\mathrm{Sech}[2c]\,\mathrm{Sech}[c+dx]^4\,(a\,b^3\,\mathrm{Sinh}[2c]+2b^4\,\mathrm{Sinh}[2c]-a\,b^3\,\mathrm{Sinh}[2dx])\right)\Big/$$
$$\left(8a^2\,(a+b)^3\,d\,(a+b\,\mathrm{Sech}[c+dx]^2)^2\right)$$

Problem 158: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Tanh}[c+dx]^6}{(a+b\,\mathrm{Sech}[c+dx]^2)^3}\,dx$$

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):

$$\frac{1}{\left(a+b\,\text{Sech}[c+dx]^2\right)^3}\left(3a^3-a^2b+4ab^2+8b^3\right)\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)^3\text{Sech}[c+dx]^6\left(\left(i\,\text{ArcTan}\left[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)\left(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx]\right)\right]\text{Cosh}[2c]\right)\Big/\left(64a^3b^2\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)-\left(i\,\text{ArcTan}\left[\text{Sech}[dx]\left(-\frac{i\,\text{Cosh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}+\frac{i\,\text{Sinh}[2c]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}}\right)\left(-a\,\text{Sinh}[dx]-2b\,\text{Sinh}[dx]+a\,\text{Sinh}[2c+dx]\right)\right]\text{Sinh}[2c]\right)\Big/\left(64a^3b^2\sqrt{a+b}\,d\sqrt{b\,\text{Cosh}[4c]-b\,\text{Sinh}[4c]}\right)\right)+$$

$$\frac{1}{128a^3b^2d\left(a+b\,\text{Sech}[c+dx]^2\right)^3}\left(a+2b+a\,\text{Cosh}[2c+2dx]\right)\text{Sech}[2c]\,\text{Sech}[c+dx]^6\left(24a^2b^2dx\,\text{Cosh}[2c]+64ab^3dx\,\text{Cosh}[2c]+64b^4dx\,\text{Cosh}[2c]+16a^2b^2dx\,\text{Cosh}[2dx]+32ab^3dx\,\text{Cosh}[2dx]+16a^2b^2dx\,\text{Cosh}[4c+2dx]+32ab^3dx\,\text{Cosh}[4c+2dx]+4a^2b^2dx\,\text{Cosh}[2c+4dx]+4a^2b^2dx\,\text{Cosh}[6c+4dx]-9a^4\,\text{Sinh}[2c]-15a^3b\,\text{Sinh}[2c]+18a^2b^2\,\text{Sinh}[2c]+72ab^3\,\text{Sinh}[2c]+48b^4\,\text{Sinh}[2c]+9a^4\,\text{Sinh}[2dx]+13a^3b\,\text{Sinh}[2dx]-28a^2b^2\,\text{Sinh}[2dx]-32ab^3\,\text{Sinh}[2dx]-3a^4\,\text{Sinh}[4c+2dx]+a^3b\,\text{Sinh}[4c+2dx]+20a^2b^2\,\text{Sinh}[4c+2dx]+16ab^3\,\text{Sinh}[4c+2dx]+3a^4\,\text{Sinh}[2c+4dx]-3a^3b\,\text{Sinh}[2c+4dx]-6a^2b^2\,\text{Sinh}[2c+4dx]\right)$$

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):

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

Result (type 3, 1730 leaves):

$$\left((a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])^3\,\text{Sech}[c+d\,x]^6\left(\frac{\left(3\,a^2+8\,a\,b+8\,b^2\right)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+d\,x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\left(a\,\sqrt{b}\,\left(3\,a^2+16\,a\,b+16\,b^2+3\,a\,(a+2\,b)\,\text{Cosh}[2\,(c+d\,x)]\right)\,\text{Sinh}[2\,(c+d\,x)]\right)\Big/\left((a+b)^2\,(a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)])^2\right)\right)\right)\Big/\left(1024\,b^{5/2}\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^3\right)-$$

$$\left((a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x])^3\,\text{Sech}[c+d\,x]^6\left(-\frac{3\,a\,(a+2\,b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+d\,x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}+\left(\sqrt{b}\,\left(3\,a^3+14\,a^2\,b+24\,a\,b^2+16\,b^3+a\,\left(3\,a^2+4\,a\,b+4\,b^2\right)\,\text{Cosh}[2\,(c+d\,x)]\right)\,\text{Sinh}[2\,(c+d\,x)]\right)\Big/\left((a+b)^2\,(a+2\,b+a\,\text{Cosh}[2\,(c+d\,x)])^2\right)\right)\right)\Big/$$

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

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

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

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

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

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

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

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

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

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

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

$$\frac{1}{2048 b^2 (a+b)^2 d \left(a+b \operatorname{Sech}[c+d x]^2\right)^3}\left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3 \operatorname{Sech}[c+d x]^6 \left(\left(6 a^2 \operatorname{ArcTanh}\left[\left(\operatorname{Sech}[d x]\left(\operatorname{Cosh}[2 c]-\operatorname{Sinh}[2 c]\right)\left((a+2 b) \operatorname{Sinh}[d x]-a \operatorname{Sinh}[2 c+d x]\right)\right)\Big/\left(2 \sqrt{a+b} \sqrt{b\left(\operatorname{Cosh}[c]-\operatorname{Sinh}[c]\right)^4}\right)\right]\left(\operatorname{Cosh}[2 c]-\operatorname{Sinh}[2 c]\right)\right)\Big/\left(\sqrt{a+b} \sqrt{b\left(\operatorname{Cosh}[c]-\operatorname{Sinh}[c]\right)^4}\right)+\left(a \operatorname{Sech}[2 c]\left(\left(-9 a^4-16 a^3 b+48 a^2 b^2+128 a b^3+64 b^4\right) \operatorname{Sinh}[2 d x]+a\left(-3 a^3+2 a^2 b+24 a b^2+16 b^3\right) \operatorname{Sinh}[2(c+2 d x)]+\left(3 a^4-64 a^2 b^2-128 a b^3-64 b^4\right) \operatorname{Sinh}[4 c+2 d x]\right)+\left(9 a^5+18 a^4 b-64 a^3 b^2-256 a^2 b^3-320 a b^4-128 b^5\right) \operatorname{Tanh}[2 c]\right)\Big/\left(a^2\left(a+2 b+a \operatorname{Cosh}[2(c+d x)]\right)^2\right)\right)$$

Problem 162: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 139 leaves, 7 steps):

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

Result (type 3, 1730 leaves):

$$-\left(\left(\left(a+2b+a\operatorname{Cosh}[2c+2dx]\right)^3\operatorname{Sech}[c+dx]^6\left(\frac{\left(3a^2+8ab+8b^2\right)\operatorname{ArcTanh}\left[\frac{\sqrt{b}\operatorname{Tanh}[c+dx]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\left(a\sqrt{b}\left(3a^2+16ab+16b^2+3a(a+2b)\operatorname{Cosh}[2(c+dx)]\right)\operatorname{Sinh}[2(c+dx)]\right)\Big/\left((a+b)^2\left(a+2b+a\operatorname{Cosh}[2(c+dx)]\right)^2\right)\right)\right)\Big/\left(1024b^{5/2}d\left(a+b\operatorname{Sech}[c+dx]^2\right)^3\right)\right)-$$

$$\left(\left(a+2b+a\operatorname{Cosh}[2c+2dx]\right)^3\operatorname{Sech}[c+dx]^6\left(-\frac{3a(a+2b)\operatorname{ArcTanh}\left[\frac{\sqrt{b}\operatorname{Tanh}[c+dx]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}+\left(\sqrt{b}\left(3a^3+14a^2b+24ab^2+16b^3+a\left(3a^2+4ab+4b^2\right)\operatorname{Cosh}[2(c+dx)]\right)\operatorname{Sinh}[2(c+dx)]\right)\Big/\left((a+b)^2\left(a+2b+a\operatorname{Cosh}[2(c+dx)]\right)^2\right)\right)\right)\Big/$$

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

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

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

$$\left(\frac{1}{(a+b)^2}\left(3a^5-10a^4b+80a^3b^2+480a^2b^3+640ab^4+256b^5\right)\left(\left(\mathrm{i}\operatorname{ArcTan}\Big[\operatorname{Sech}[dx]\right.\right.\right.$$

$$\left(-\frac{\mathrm{i}\operatorname{Cosh}[2c]}{2\sqrt{a+b}\sqrt{b\operatorname{Cosh}[4c]-b\operatorname{Sinh}[4c]}}+\frac{\mathrm{i}\operatorname{Sinh}[2c]}{2\sqrt{a+b}\sqrt{b\operatorname{Cosh}[4c]-b\operatorname{Sinh}[4c]}}\right)$$

$$\left.\left(-a\operatorname{Sinh}[dx]-2b\operatorname{Sinh}[dx]+a\operatorname{Sinh}[2c+dx]\right)\Big]\operatorname{Cosh}[2c]\right)\Big/$$

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

$$\left(-\frac{\mathrm{i}\operatorname{Cosh}[2c]}{2\sqrt{a+b}\sqrt{b\operatorname{Cosh}[4c]-b\operatorname{Sinh}[4c]}}+\frac{\mathrm{i}\operatorname{Sinh}[2c]}{2\sqrt{a+b}\sqrt{b\operatorname{Cosh}[4c]-b\operatorname{Sinh}[4c]}}\right)$$

$$\left.\left(-a\operatorname{Sinh}[dx]-2b\operatorname{Sinh}[dx]+a\operatorname{Sinh}[2c+dx]\right)\Big]\operatorname{Sinh}[2c]\right)\Big/$$

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

$$\frac{1}{128a^3b^2(a+b)^2d\left(a+2b+a\operatorname{Cosh}[2c+2dx]\right)^2}\operatorname{Sech}[2c]$$

$$\left(768a^4b^2dx\operatorname{Cosh}[2c]+3584a^3b^3dx\operatorname{Cosh}[2c]+6912a^2b^4dx\operatorname{Cosh}[2c]+\right.$$
$$6144ab^5dx\operatorname{Cosh}[2c]+2048b^6dx\operatorname{Cosh}[2c]+512a^4b^2dx\operatorname{Cosh}[2dx]+$$
$$2048a^3b^3dx\operatorname{Cosh}[2dx]+2560a^2b^4dx\operatorname{Cosh}[2dx]+1024ab^5dx\operatorname{Cosh}[2dx]+$$
$$512a^4b^2dx\operatorname{Cosh}[4c+2dx]+2048a^3b^3dx\operatorname{Cosh}[4c+2dx]+$$
$$2560a^2b^4dx\operatorname{Cosh}[4c+2dx]+1024ab^5dx\operatorname{Cosh}[4c+2dx]+$$
$$128a^4b^2dx\operatorname{Cosh}[2c+4dx]+256a^3b^3dx\operatorname{Cosh}[2c+4dx]+$$

$$128\,a^2 b^4 d\,x\,\text{Cosh}[2c+4dx] + 128\,a^4 b^2 d\,x\,\text{Cosh}[6c+4dx] + 256\,a^3 b^3 d\,x\,\text{Cosh}[6c+4dx] + 128\,a^2 b^4 d\,x\,\text{Cosh}[6c+4dx] - 9\,a^6\,\text{Sinh}[2c] + 12\,a^5 b\,\text{Sinh}[2c] + 684\,a^4 b^2\,\text{Sinh}[2c] + 2880\,a^3 b^3\,\text{Sinh}[2c] + 5280\,a^2 b^4\,\text{Sinh}[2c] + 4608\,a\,b^5\,\text{Sinh}[2c] + 1536\,b^6\,\text{Sinh}[2c] + 9\,a^6\,\text{Sinh}[2dx] - 14\,a^5 b\,\text{Sinh}[2dx] - 608\,a^4 b^2\,\text{Sinh}[2dx] - 2112\,a^3 b^3\,\text{Sinh}[2dx] - 2560\,a^2 b^4\,\text{Sinh}[2dx] - 1024\,a\,b^5\,\text{Sinh}[2dx] - 3\,a^6\,\text{Sinh}[4c+2dx] + 10\,a^5 b\,\text{Sinh}[4c+2dx] + 304\,a^4 b^2\,\text{Sinh}[4c+2dx] + 1056\,a^3 b^3\,\text{Sinh}[4c+2dx] + 1280\,a^2 b^4\,\text{Sinh}[4c+2dx] + 512\,a\,b^5\,\text{Sinh}[4c+2dx] + 3\,a^6\,\text{Sinh}[2c+4dx] - 12\,a^5 b\,\text{Sinh}[2c+4dx] - 204\,a^4 b^2\,\text{Sinh}[2c+4dx] - 384\,a^3 b^3\,\text{Sinh}[2c+4dx] - 192\,a^2 b^4\,\text{Sinh}[2c+4dx]\Big)\Bigg) +$$

$$\frac{1}{2048\,b^2 (a+b)^2 d\,(a+b\,\text{Sech}[c+dx]^2)^3}(a+2b+a\,\text{Cosh}[2c+2dx])^3\,\text{Sech}[c+dx]^6 \Bigg(\Bigg(6\,a^2\,\text{ArcTanh}\Big[\big(\text{Sech}[dx]\,(\text{Cosh}[2c]-\text{Sinh}[2c])\,((a+2b)\,\text{Sinh}[dx]-a\,\text{Sinh}[2c+dx])\big)\Big/\Big(2\sqrt{a+b}\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\Big)\Big]\,(\text{Cosh}[2c]-\text{Sinh}[2c])\Bigg)\Big/\Big(\sqrt{a+b}\,\sqrt{b\,(\text{Cosh}[c]-\text{Sinh}[c])^4}\Big) + \Big(a\,\text{Sech}[2c]\,\Big(\big((-9a^4-16a^3b+48a^2b^2+128ab^3+64b^4)\,\text{Sinh}[2dx] + a\,(-3a^3+2a^2b+24ab^2+16b^3)\,\text{Sinh}[2(c+2dx)] + (3a^4-64a^2b^2-128ab^3-64b^4)\,\text{Sinh}[4c+2dx]\big) + (9a^5+18a^4b-64a^3b^2-256a^2b^3-320ab^4-128b^5)\,\text{Tanh}[2c]\Big)\Big/\Big(a^2\,(a+2b+a\,\text{Cosh}[2(c+dx)])^2\Big)\Bigg)$$

Problem 164: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 146 leaves, 6 steps):

$$\frac{x}{a^3} - \frac{\sqrt{b}\,(15a^2+20ab+8b^2)\,\text{ArcTanh}\Big[\frac{\sqrt{b}\,\text{Tanh}[c+dx]}{\sqrt{a+b}}\Big]}{8\,a^3\,(a+b)^{5/2}\,d} - \frac{b\,\text{Tanh}[c+dx]}{4\,a\,(a+b)\,d\,(a+b-b\,\text{Tanh}[c+dx]^2)^2} - \frac{b\,(7a+4b)\,\text{Tanh}[c+dx]}{8\,a^2\,(a+b)^2\,d\,(a+b-b\,\text{Tanh}[c+dx]^2)}$$

Result (type 3, 597 leaves):

$$\frac{x\left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3 \operatorname{Sech}[c+d x]^6}{8 a^3\left(a+b \operatorname{Sech}[c+d x]^2\right)^3}+\frac{1}{(a+b)^2\left(a+b \operatorname{Sech}[c+d x]^2\right)^3}$$
$$\left(15 a^2+20 a b+8 b^2\right)\left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^3 \operatorname{Sech}[c+d x]^6\left(\left(\left(\mathrm{i}\, b \operatorname{ArcTan}\left[\operatorname{Sech}[d x]\right.\right.\right.\right.$$
$$\left(-\frac{\mathrm{i} \operatorname{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}+\frac{\mathrm{i} \operatorname{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}\right)$$
$$\left.\left.\left(-a \operatorname{Sinh}[d x]-2 b \operatorname{Sinh}[d x]+a \operatorname{Sinh}[2 c+d x]\right)\right] \operatorname{Cosh}[2 c]\right) \Big/$$
$$\left(64 a^3 \sqrt{a+b}\, d \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}\right)-\left(\mathrm{i}\, b \operatorname{ArcTan}\left[\operatorname{Sech}[d x]\right.\right.$$
$$\left(-\frac{\mathrm{i} \operatorname{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}+\frac{\mathrm{i} \operatorname{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}\right)$$
$$\left.\left.\left(-a \operatorname{Sinh}[d x]-2 b \operatorname{Sinh}[d x]+a \operatorname{Sinh}[2 c+d x]\right)\right] \operatorname{Sinh}[2 c]\right) \Big/$$
$$\left.\left(64 a^3 \sqrt{a+b}\, d \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}\right)\right)+$$
$$\left(\left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right)^2 \operatorname{Sech}[2 c] \operatorname{Sech}[c+d x]^6\right.$$
$$\left.\left(9 a^2 b \operatorname{Sinh}[2 c]+28 a b^2 \operatorname{Sinh}[2 c]+16 b^3 \operatorname{Sinh}[2 c]-9 a^2 b \operatorname{Sinh}[2 d x]-6 a b^2 \operatorname{Sinh}[2 d x]\right)\right) \Big/$$
$$\left(64 a^3 (a+b)^2 d\left(a+b \operatorname{Sech}[c+d x]^2\right)^3\right)+$$
$$\left(\left(a+2 b+a \operatorname{Cosh}[2 c+2 d x]\right) \operatorname{Sech}[2 c] \operatorname{Sech}[c+d x]^6\right.$$
$$\left.\left(-a b^2 \operatorname{Sinh}[2 c]-2 b^3 \operatorname{Sinh}[2 c]+a b^2 \operatorname{Sinh}[2 d x]\right)\right) \Big/$$
$$\left(16 a^3 (a+b) d\left(a+b \operatorname{Sech}[c+d x]^2\right)^3\right)$$

Problem 165: Result more than twice size of optimal antiderivative.

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

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):

$$\frac{1}{4 a^3 (a+b)^3 d (a+2 b+a \operatorname{Cosh}[2 (c+d x)])^2}\Big(12 a^3 b^2+40 a^2 b^3+40 a b^4+12 b^5+9 a^4 b \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+33 a^3 b^2 \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+51 a^2 b^3 \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+32 a b^4 \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+8 b^5 \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+6 a^5 \operatorname{Log}[\operatorname{Sinh}[c+d x]]+16 a^4 b \operatorname{Log}[\operatorname{Sinh}[c+d x]]+16 a^3 b^2 \operatorname{Log}[\operatorname{Sinh}[c+d x]]+a^2 \operatorname{Cosh}[4 (c+d x)] \left(b (3 a^2+3 a b+b^2) \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+2 a^3 \operatorname{Log}[\operatorname{Sinh}[c+d x]]\right)+4 a \operatorname{Cosh}[2 (c+d x)] \left(b^2 (3 a^2+5 a b+2 b^2)+b (3 a^3+9 a^2 b+7 a b^2+2 b^3) \operatorname{Log}[a+2 b+a \operatorname{Cosh}[2 (c+d x)]]+2 a^3 (a+2 b) \operatorname{Log}[\operatorname{Sinh}[c+d x]]\right)\Big)$$

Problem 166: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 182 leaves, 8 steps):

$$\frac{x}{a^3}-\frac{b^{3/2} (35 a^2+28 a b+8 b^2) \operatorname{ArcTanh}\left[\frac{\sqrt{b} \operatorname{Tanh}[c+d x]}{\sqrt{a+b}}\right]}{8 a^3 (a+b)^{7/2} d}-\frac{(8 a^2-11 a b-4 b^2) \operatorname{Coth}[c+d x]}{8 a^2 (a+b)^3 d}-\frac{b \operatorname{Coth}[c+d x]}{4 a (a+b) d (a+b-b \operatorname{Tanh}[c+d x]^2)^2}-\frac{b (9 a+4 b) \operatorname{Coth}[c+d x]}{8 a^2 (a+b)^2 d (a+b-b \operatorname{Tanh}[c+d x]^2)}$$

Result (type 3, 2083 leaves):

$$\frac{1}{(a+b)^3 (a+b \operatorname{Sech}[c+d x]^2)^3}(35 a^2+28 a b+8 b^2) (a+2 b+a \operatorname{Cosh}[2 c+2 d x])^3 \operatorname{Sech}[c+d x]^6 \Bigg(\Bigg(i b^2 \operatorname{ArcTan}\Bigg[\operatorname{Sech}[d x] \left(-\frac{i \operatorname{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}+\frac{i \operatorname{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}\right) (-a \operatorname{Sinh}[d x]-2 b \operatorname{Sinh}[d x]+a \operatorname{Sinh}[2 c+d x])\Bigg] \operatorname{Cosh}[2 c]\Bigg) \Bigg/ \left(64 a^3 \sqrt{a+b}\, d \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}\right)-\Bigg(i b^2 \operatorname{ArcTan}\Bigg[\operatorname{Sech}[d x] \left(-\frac{i \operatorname{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}+\frac{i \operatorname{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}}\right) (-a \operatorname{Sinh}[d x]-2 b \operatorname{Sinh}[d x]+a \operatorname{Sinh}[2 c+d x])\Bigg] \operatorname{Sinh}[2 c]\Bigg) \Bigg/ \left(64 a^3 \sqrt{a+b}\, d \sqrt{b \operatorname{Cosh}[4 c]-b \operatorname{Sinh}[4 c]}\right)\Bigg)+$$

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

$$\text{Csch}[c]$$

$$\text{Csch}[c+d\, x]$$

$$\text{Sech}[2\, c]$$

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

$$\big(8\, a^5\, d\, x\, \text{Cosh}[d\, x]+56\, a^4\, b\, d\, x\, \text{Cosh}[d\, x]+184\, a^3\, b^2\, d\, x\, \text{Cosh}[d\, x]+296\, a^2\, b^3\, d\, x\, \text{Cosh}[d\, x]+$$
$$224\, a\, b^4\, d\, x\, \text{Cosh}[d\, x]+64\, b^5\, d\, x\, \text{Cosh}[d\, x]-12\, a^5\, d\, x\, \text{Cosh}[3\, d\, x]-$$
$$68\, a^4\, b\, d\, x\, \text{Cosh}[3\, d\, x]-132\, a^3\, b^2\, d\, x\, \text{Cosh}[3\, d\, x]-108\, a^2\, b^3\, d\, x\, \text{Cosh}[3\, d\, x]-$$
$$32\, a\, b^4\, d\, x\, \text{Cosh}[3\, d\, x]-8\, a^5\, d\, x\, \text{Cosh}[2\, c-d\, x]-56\, a^4\, b\, d\, x\, \text{Cosh}[2\, c-d\, x]-$$
$$184\, a^3\, b^2\, d\, x\, \text{Cosh}[2\, c-d\, x]-296\, a^2\, b^3\, d\, x\, \text{Cosh}[2\, c-d\, x]-224\, a\, b^4\, d\, x\, \text{Cosh}[2\, c-d\, x]-$$
$$64\, b^5\, d\, x\, \text{Cosh}[2\, c-d\, x]-8\, a^5\, d\, x\, \text{Cosh}[2\, c+d\, x]-56\, a^4\, b\, d\, x\, \text{Cosh}[2\, c+d\, x]-$$
$$184\, a^3\, b^2\, d\, x\, \text{Cosh}[2\, c+d\, x]-296\, a^2\, b^3\, d\, x\, \text{Cosh}[2\, c+d\, x]-224\, a\, b^4\, d\, x\, \text{Cosh}[2\, c+d\, x]-$$
$$64\, b^5\, d\, x\, \text{Cosh}[2\, c+d\, x]+8\, a^5\, d\, x\, \text{Cosh}[4\, c+d\, x]+56\, a^4\, b\, d\, x\, \text{Cosh}[4\, c+d\, x]+$$
$$184\, a^3\, b^2\, d\, x\, \text{Cosh}[4\, c+d\, x]+296\, a^2\, b^3\, d\, x\, \text{Cosh}[4\, c+d\, x]+224\, a\, b^4\, d\, x\, \text{Cosh}[4\, c+d\, x]+$$
$$64\, b^5\, d\, x\, \text{Cosh}[4\, c+d\, x]+12\, a^5\, d\, x\, \text{Cosh}[2\, c+3\, d\, x]+68\, a^4\, b\, d\, x\, \text{Cosh}[2\, c+3\, d\, x]+$$
$$132\, a^3\, b^2\, d\, x\, \text{Cosh}[2\, c+3\, d\, x]+108\, a^2\, b^3\, d\, x\, \text{Cosh}[2\, c+3\, d\, x]+32\, a\, b^4\, d\, x\, \text{Cosh}[2\, c+3\, d\, x]-$$
$$12\, a^5\, d\, x\, \text{Cosh}[4\, c+3\, d\, x]-68\, a^4\, b\, d\, x\, \text{Cosh}[4\, c+3\, d\, x]-132\, a^3\, b^2\, d\, x\, \text{Cosh}[4\, c+3\, d\, x]-$$
$$108\, a^2\, b^3\, d\, x\, \text{Cosh}[4\, c+3\, d\, x]-32\, a\, b^4\, d\, x\, \text{Cosh}[4\, c+3\, d\, x]+12\, a^5\, d\, x\, \text{Cosh}[6\, c+3\, d\, x]+$$
$$68\, a^4\, b\, d\, x\, \text{Cosh}[6\, c+3\, d\, x]+132\, a^3\, b^2\, d\, x\, \text{Cosh}[6\, c+3\, d\, x]+108\, a^2\, b^3\, d\, x\, \text{Cosh}[6\, c+3\, d\, x]+$$
$$32\, a\, b^4\, d\, x\, \text{Cosh}[6\, c+3\, d\, x]-4\, a^5\, d\, x\, \text{Cosh}[2\, c+5\, d\, x]-12\, a^4\, b\, d\, x\, \text{Cosh}[2\, c+5\, d\, x]-$$
$$12\, a^3\, b^2\, d\, x\, \text{Cosh}[2\, c+5\, d\, x]-4\, a^2\, b^3\, d\, x\, \text{Cosh}[2\, c+5\, d\, x]+4\, a^5\, d\, x\, \text{Cosh}[4\, c+5\, d\, x]+$$
$$12\, a^4\, b\, d\, x\, \text{Cosh}[4\, c+5\, d\, x]+12\, a^3\, b^2\, d\, x\, \text{Cosh}[4\, c+5\, d\, x]+4\, a^2\, b^3\, d\, x\, \text{Cosh}[4\, c+5\, d\, x]-$$
$$4\, a^5\, d\, x\, \text{Cosh}[6\, c+5\, d\, x]-12\, a^4\, b\, d\, x\, \text{Cosh}[6\, c+5\, d\, x]-12\, a^3\, b^2\, d\, x\, \text{Cosh}[6\, c+5\, d\, x]-$$
$$4\, a^2\, b^3\, d\, x\, \text{Cosh}[6\, c+5\, d\, x]+4\, a^5\, d\, x\, \text{Cosh}[8\, c+5\, d\, x]+12\, a^4\, b\, d\, x\, \text{Cosh}[8\, c+5\, d\, x]+$$
$$12\, a^3\, b^2\, d\, x\, \text{Cosh}[8\, c+5\, d\, x]+4\, a^2\, b^3\, d\, x\, \text{Cosh}[8\, c+5\, d\, x]-32\, a^5\, \text{Sinh}[d\, x]-$$
$$64\, a^4\, b\, \text{Sinh}[d\, x]-30\, a^2\, b^3\, \text{Sinh}[d\, x]-120\, a\, b^4\, \text{Sinh}[d\, x]-48\, b^5\, \text{Sinh}[d\, x]+$$
$$32\, a^5\, \text{Sinh}[3\, d\, x]+64\, a^4\, b\, \text{Sinh}[3\, d\, x]+26\, a^3\, b^2\, \text{Sinh}[3\, d\, x]+86\, a^2\, b^3\, \text{Sinh}[3\, d\, x]+$$
$$32\, a\, b^4\, \text{Sinh}[3\, d\, x]-48\, a^5\, \text{Sinh}[2\, c-d\, x]-128\, a^4\, b\, \text{Sinh}[2\, c-d\, x]-128\, a^3\, b^2\, \text{Sinh}[2\, c-d\, x]-$$
$$30\, a^2\, b^3\, \text{Sinh}[2\, c-d\, x]-120\, a\, b^4\, \text{Sinh}[2\, c-d\, x]-48\, b^5\, \text{Sinh}[2\, c-d\, x]+$$
$$48\, a^5\, \text{Sinh}[2\, c+d\, x]+128\, a^4\, b\, \text{Sinh}[2\, c+d\, x]+102\, a^3\, b^2\, \text{Sinh}[2\, c+d\, x]-$$
$$86\, a^2\, b^3\, \text{Sinh}[2\, c+d\, x]-136\, a\, b^4\, \text{Sinh}[2\, c+d\, x]-48\, b^5\, \text{Sinh}[2\, c+d\, x]-32\, a^5\, \text{Sinh}[4\, c+d\, x]-$$
$$64\, a^4\, b\, \text{Sinh}[4\, c+d\, x]+26\, a^3\, b^2\, \text{Sinh}[4\, c+d\, x]+86\, a^2\, b^3\, \text{Sinh}[4\, c+d\, x]+$$
$$136\, a\, b^4\, \text{Sinh}[4\, c+d\, x]+48\, b^5\, \text{Sinh}[4\, c+d\, x]-8\, a^5\, \text{Sinh}[2\, c+3\, d\, x]-$$
$$26\, a^3\, b^2\, \text{Sinh}[2\, c+3\, d\, x]-86\, a^2\, b^3\, \text{Sinh}[2\, c+3\, d\, x]-32\, a\, b^4\, \text{Sinh}[2\, c+3\, d\, x]+$$
$$32\, a^5\, \text{Sinh}[4\, c+3\, d\, x]+64\, a^4\, b\, \text{Sinh}[4\, c+3\, d\, x]-13\, a^3\, b^2\, \text{Sinh}[4\, c+3\, d\, x]-$$
$$36\, a^2\, b^3\, \text{Sinh}[4\, c+3\, d\, x]-16\, a\, b^4\, \text{Sinh}[4\, c+3\, d\, x]-8\, a^5\, \text{Sinh}[6\, c+3\, d\, x]+$$
$$13\, a^3\, b^2\, \text{Sinh}[6\, c+3\, d\, x]+36\, a^2\, b^3\, \text{Sinh}[6\, c+3\, d\, x]+16\, a\, b^4\, \text{Sinh}[6\, c+3\, d\, x]+$$
$$8\, a^5\, \text{Sinh}[2\, c+5\, d\, x]+13\, a^3\, b^2\, \text{Sinh}[2\, c+5\, d\, x]+6\, a^2\, b^3\, \text{Sinh}[2\, c+5\, d\, x]-$$
$$13\, a^3\, b^2\, \text{Sinh}[4\, c+5\, d\, x]-6\, a^2\, b^3\, \text{Sinh}[4\, c+5\, d\, x]+8\, a^5\, \text{Sinh}[6\, c+5\, d\, x]\big)$$

Problem 168: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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) :

$$\frac{1}{(a+b)^4 \left(a+b \text{Sech}[c+d x]^2\right)^3}\left(63 a^2+36 a b+8 b^2\right) (a+2 b+a \text{Cosh}[2 c+2 d x])^3 \text{Sech}[c+d x]^6 \left(\left(\left(i\, b^3 \text{ArcTan}\left[\text{Sech}[d x]\left(-\frac{i \text{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}+\frac{i \text{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}\right)(-a \text{Sinh}[d x]-2 b \text{Sinh}[d x]+a \text{Sinh}[2 c+d x])\right] \text{Cosh}[2 c]\right)\Big/\left(64 a^3 \sqrt{a+b}\ d \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}\right)-\left(i\, b^3 \text{ArcTan}\left[\text{Sech}[d x]\left(-\frac{i \text{Cosh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}+\frac{i \text{Sinh}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}}\right)(-a \text{Sinh}[d x]-2 b \text{Sinh}[d x]+a \text{Sinh}[2 c+d x])\right] \text{Sinh}[2 c]\right)\Big/\left(64 a^3 \sqrt{a+b}\ d \sqrt{b \text{Cosh}[4 c]-b \text{Sinh}[4 c]}\right)\right)+$$

$$\frac{1}{6144 a^3 (a+b)^4 d \left(a+b \text{Sech}[c+d x]^2\right)^3}(a+2 b+a \text{Cosh}[2 c+2 d x]) \text{Csch}[c] \text{Csch}[c+d x]^3 \text{Sech}[2 c] \text{Sech}[c+d x]^6$$
$$\left(-36 a^6 d x \text{Cosh}[d x]-336 a^5 b d x \text{Cosh}[d x]-1560 a^4 b^2 d x \text{Cosh}[d x]-3600 a^3 b^3 d x \text{Cosh}[d x]-4260 a^2 b^4 d x \text{Cosh}[d x]-2496 a b^5 d x \text{Cosh}[d x]-576 b^6 d x \text{Cosh}[d x]+36 a^6 d x \text{Cosh}[3 d x]+240 a^5 b d x \text{Cosh}[3 d x]+408 a^4 b^2 d x \text{Cosh}[3 d x]-48 a^3 b^3 d x \text{Cosh}[3 d x]-732 a^2 b^4 d x \text{Cosh}[3 d x]-672 a b^5 d x \text{Cosh}[3 d x]-192 b^6 d x \text{Cosh}[3 d x]+36 a^6 d x \text{Cosh}[2 c-d x]+336 a^5 b d x \text{Cosh}[2 c-d x]+1560 a^4 b^2 d x \text{Cosh}[2 c-d x]+3600 a^3 b^3 d x \text{Cosh}[2 c-d x]+4260 a^2 b^4 d x \text{Cosh}[2 c-d x]+2496 a b^5 d x \text{Cosh}[2 c-d x]+576 b^6 d x \text{Cosh}[2 c-d x]+36 a^6 d x \text{Cosh}[2 c+d x]+336 a^5 b d x \text{Cosh}[2 c+d x]+1560 a^4 b^2 d x \text{Cosh}[2 c+d x]+3600 a^3 b^3 d x \text{Cosh}[2 c+d x]+4260 a^2 b^4 d x \text{Cosh}[2 c+d x]+2496 a b^5 d x \text{Cosh}[2 c+d x]+576 b^6 d x \text{Cosh}[2 c+d x]-36 a^6 d x \text{Cosh}[4 c+d x]-336 a^5 b d x \text{Cosh}[4 c+d x]-1560 a^4 b^2 d x \text{Cosh}[4 c+d x]-3600 a^3 b^3 d x \text{Cosh}[4 c+d x]-4260 a^2 b^4 d x \text{Cosh}[4 c+d x]-2496 a b^5 d x \text{Cosh}[4 c+d x]-576 b^6 d x \text{Cosh}[4 c+d x]-36 a^6 d x \text{Cosh}[2 c+3 d x]-\right.$$

$240 a^5 b d x \text{Cosh}[2 c+3 d x]-408 a^4 b^2 d x \text{Cosh}[2 c+3 d x]+48 a^3 b^3 d x \text{Cosh}[2 c+3 d x]+$
$732 a^2 b^4 d x \text{Cosh}[2 c+3 d x]+672 a b^5 d x \text{Cosh}[2 c+3 d x]+192 b^6 d x \text{Cosh}[2 c+3 d x]+$
$36 a^6 d x \text{Cosh}[4 c+3 d x]+240 a^5 b d x \text{Cosh}[4 c+3 d x]+408 a^4 b^2 d x \text{Cosh}[4 c+3 d x]-$
$48 a^3 b^3 d x \text{Cosh}[4 c+3 d x]-732 a^2 b^4 d x \text{Cosh}[4 c+3 d x]-672 a b^5 d x \text{Cosh}[4 c+3 d x]-$
$192 b^6 d x \text{Cosh}[4 c+3 d x]-36 a^6 d x \text{Cosh}[6 c+3 d x]-240 a^5 b d x \text{Cosh}[6 c+3 d x]-$
$408 a^4 b^2 d x \text{Cosh}[6 c+3 d x]+48 a^3 b^3 d x \text{Cosh}[6 c+3 d x]+732 a^2 b^4 d x \text{Cosh}[6 c+3 d x]+$
$672 a b^5 d x \text{Cosh}[6 c+3 d x]+192 b^6 d x \text{Cosh}[6 c+3 d x]-12 a^6 d x \text{Cosh}[2 c+5 d x]-$
$144 a^5 b d x \text{Cosh}[2 c+5 d x]-456 a^4 b^2 d x \text{Cosh}[2 c+5 d x]-624 a^3 b^3 d x \text{Cosh}[2 c+5 d x]-$
$396 a^2 b^4 d x \text{Cosh}[2 c+5 d x]-96 a b^5 d x \text{Cosh}[2 c+5 d x]+12 a^6 d x \text{Cosh}[4 c+5 d x]+$
$144 a^5 b d x \text{Cosh}[4 c+5 d x]+456 a^4 b^2 d x \text{Cosh}[4 c+5 d x]+624 a^3 b^3 d x \text{Cosh}[4 c+5 d x]+$
$396 a^2 b^4 d x \text{Cosh}[4 c+5 d x]+96 a b^5 d x \text{Cosh}[4 c+5 d x]-12 a^6 d x \text{Cosh}[6 c+5 d x]-$
$144 a^5 b d x \text{Cosh}[6 c+5 d x]-456 a^4 b^2 d x \text{Cosh}[6 c+5 d x]-624 a^3 b^3 d x \text{Cosh}[6 c+5 d x]-$
$396 a^2 b^4 d x \text{Cosh}[6 c+5 d x]-96 a b^5 d x \text{Cosh}[6 c+5 d x]+12 a^6 d x \text{Cosh}[8 c+5 d x]+$
$144 a^5 b d x \text{Cosh}[8 c+5 d x]+456 a^4 b^2 d x \text{Cosh}[8 c+5 d x]+624 a^3 b^3 d x \text{Cosh}[8 c+5 d x]+$
$396 a^2 b^4 d x \text{Cosh}[8 c+5 d x]+96 a b^5 d x \text{Cosh}[8 c+5 d x]-12 a^6 d x \text{Cosh}[4 c+7 d x]-$
$48 a^5 b d x \text{Cosh}[4 c+7 d x]-72 a^4 b^2 d x \text{Cosh}[4 c+7 d x]-48 a^3 b^3 d x \text{Cosh}[4 c+7 d x]-$
$12 a^2 b^4 d x \text{Cosh}[4 c+7 d x]+12 a^6 d x \text{Cosh}[6 c+7 d x]+48 a^5 b d x \text{Cosh}[6 c+7 d x]+$
$72 a^4 b^2 d x \text{Cosh}[6 c+7 d x]+48 a^3 b^3 d x \text{Cosh}[6 c+7 d x]+12 a^2 b^4 d x \text{Cosh}[6 c+7 d x]-$
$12 a^6 d x \text{Cosh}[8 c+7 d x]-48 a^5 b d x \text{Cosh}[8 c+7 d x]-72 a^4 b^2 d x \text{Cosh}[8 c+7 d x]-$
$48 a^3 b^3 d x \text{Cosh}[8 c+7 d x]-12 a^2 b^4 d x \text{Cosh}[8 c+7 d x]+12 a^6 d x \text{Cosh}[10 c+7 d x]+$
$48 a^5 b d x \text{Cosh}[10 c+7 d x]+72 a^4 b^2 d x \text{Cosh}[10 c+7 d x]+48 a^3 b^3 d x \text{Cosh}[10 c+7 d x]+$
$12 a^2 b^4 d x \text{Cosh}[10 c+7 d x]-128 a^6 \text{Sinh}[d x]-440 a^5 b \text{Sinh}[d x]-$
$1152 a^4 b^2 \text{Sinh}[d x]-1920 a^3 b^3 \text{Sinh}[d x]+228 a^2 b^4 \text{Sinh}[d x]+1320 a b^5 \text{Sinh}[d x]+$
$432 b^6 \text{Sinh}[d x]+48 a^6 \text{Sinh}[3 d x]+104 a^5 b \text{Sinh}[3 d x]+640 a^4 b^2 \text{Sinh}[3 d x]+$
$1511 a^3 b^3 \text{Sinh}[3 d x]-528 a^2 b^4 \text{Sinh}[3 d x]+264 a b^5 \text{Sinh}[3 d x]+144 b^6 \text{Sinh}[3 d x]-$
$32 a^6 \text{Sinh}[2 c-d x]+384 a^5 b \text{Sinh}[2 c-d x]+2048 a^4 b^2 \text{Sinh}[2 c-d x]+$
$3072 a^3 b^3 \text{Sinh}[2 c-d x]+228 a^2 b^4 \text{Sinh}[2 c-d x]+1320 a b^5 \text{Sinh}[2 c-d x]+$
$432 b^6 \text{Sinh}[2 c-d x]+32 a^6 \text{Sinh}[2 c+d x]-384 a^5 b \text{Sinh}[2 c+d x]-$
$2048 a^4 b^2 \text{Sinh}[2 c+d x]-2919 a^3 b^3 \text{Sinh}[2 c+d x]+642 a^2 b^4 \text{Sinh}[2 c+d x]+$
$1416 a b^5 \text{Sinh}[2 c+d x]+432 b^6 \text{Sinh}[2 c+d x]-128 a^6 \text{Sinh}[4 c+d x]-$
$440 a^5 b \text{Sinh}[4 c+d x]-1152 a^4 b^2 \text{Sinh}[4 c+d x]-2073 a^3 b^3 \text{Sinh}[4 c+d x]-$
$642 a^2 b^4 \text{Sinh}[4 c+d x]-1416 a b^5 \text{Sinh}[4 c+d x]-432 b^6 \text{Sinh}[4 c+d x]-$
$144 a^6 \text{Sinh}[2 c+3 d x]-672 a^5 b \text{Sinh}[2 c+3 d x]-960 a^4 b^2 \text{Sinh}[2 c+3 d x]+$
$153 a^3 b^3 \text{Sinh}[2 c+3 d x]+528 a^2 b^4 \text{Sinh}[2 c+3 d x]-264 a b^5 \text{Sinh}[2 c+3 d x]-$
$144 b^6 \text{Sinh}[2 c+3 d x]+48 a^6 \text{Sinh}[4 c+3 d x]+104 a^5 b \text{Sinh}[4 c+3 d x]+$
$640 a^4 b^2 \text{Sinh}[4 c+3 d x]+1664 a^3 b^3 \text{Sinh}[4 c+3 d x]-66 a^2 b^4 \text{Sinh}[4 c+3 d x]-$
$408 a b^5 \text{Sinh}[4 c+3 d x]-144 b^6 \text{Sinh}[4 c+3 d x]-144 a^6 \text{Sinh}[6 c+3 d x]-$
$672 a^5 b \text{Sinh}[6 c+3 d x]-960 a^4 b^2 \text{Sinh}[6 c+3 d x]+66 a^2 b^4 \text{Sinh}[6 c+3 d x]+$
$408 a b^5 \text{Sinh}[6 c+3 d x]+144 b^6 \text{Sinh}[6 c+3 d x]+80 a^6 \text{Sinh}[2 c+5 d x]+$
$480 a^5 b \text{Sinh}[2 c+5 d x]+832 a^4 b^2 \text{Sinh}[2 c+5 d x]+294 a^2 b^4 \text{Sinh}[2 c+5 d x]+$
$96 a b^5 \text{Sinh}[2 c+5 d x]-48 a^6 \text{Sinh}[4 c+5 d x]-120 a^5 b \text{Sinh}[4 c+5 d x]-$
$294 a^2 b^4 \text{Sinh}[4 c+5 d x]-96 a b^5 \text{Sinh}[4 c+5 d x]+80 a^6 \text{Sinh}[6 c+5 d x]+$
$480 a^5 b \text{Sinh}[6 c+5 d x]+832 a^4 b^2 \text{Sinh}[6 c+5 d x]-51 a^3 b^3 \text{Sinh}[6 c+5 d x]-$
$132 a^2 b^4 \text{Sinh}[6 c+5 d x]-48 a b^5 \text{Sinh}[6 c+5 d x]-48 a^6 \text{Sinh}[8 c+5 d x]-$
$120 a^5 b \text{Sinh}[8 c+5 d x]+51 a^3 b^3 \text{Sinh}[8 c+5 d x]+132 a^2 b^4 \text{Sinh}[8 c+5 d x]+$
$48 a b^5 \text{Sinh}[8 c+5 d x]+32 a^6 \text{Sinh}[4 c+7 d x]+104 a^5 b \text{Sinh}[4 c+7 d x]+$
$51 a^3 b^3 \text{Sinh}[4 c+7 d x]+18 a^2 b^4 \text{Sinh}[4 c+7 d x]-51 a^3 b^3 \text{Sinh}[6 c+7 d x]-$
$18 a^2 b^4 \text{Sinh}[6 c+7 d x]+32 a^6 \text{Sinh}[8 c+7 d x]+104 a^5 b \text{Sinh}[8 c+7 d x])$

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):

$$\frac{x}{a^4} - \frac{\sqrt{b}\,\left(35\,a^3 + 70\,a^2\,b + 56\,a\,b^2 + 16\,b^3\right)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tanh}[c+d\,x]}{\sqrt{a+b}}\right]}{16\,a^4\,(a+b)^{7/2}\,d} - \frac{b\,\text{Tanh}[c + d\,x]}{6\,a\,(a+b)\,d\,\left(a + b - b\,\text{Tanh}[c + d\,x]^2\right)^3} - \frac{b\,(11\,a + 6\,b)\,\text{Tanh}[c + d\,x]}{24\,a^2\,(a+b)^2\,d\,\left(a + b - b\,\text{Tanh}[c + d\,x]^2\right)^2} - \frac{b\,\left(19\,a^2 + 22\,a\,b + 8\,b^2\right)\,\text{Tanh}[c + d\,x]}{16\,a^3\,(a+b)^3\,d\,\left(a + b - b\,\text{Tanh}[c + d\,x]^2\right)}$$

Result (type 3, 1405 leaves):

$$\frac{1}{(a+b)^3\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^4}\left(35\,a^3+70\,a^2\,b+56\,a\,b^2+16\,b^3\right)$$

$$\left(a+2\,b+a\,\text{Cosh}[2\,c+2\,d\,x]\right)^4\,\text{Sech}[c+d\,x]^8\,\Bigg(\Bigg(\Bigg(\mathbb{i}\,b\,\text{ArcTan}\Big[\text{Sech}[d\,x]$$

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

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

$$\left(256\,a^4\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)-\Bigg(\mathbb{i}\,b\,\text{ArcTan}\Big[\text{Sech}[d\,x]$$

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

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

$$\left(256\,a^4\,\sqrt{a+b}\,d\,\sqrt{b\,\text{Cosh}[4\,c]-b\,\text{Sinh}[4\,c]}\right)\Bigg)+$$

$$\frac{1}{3072\,a^4\,(a+b)^3\,d\,\left(a+b\,\text{Sech}[c+d\,x]^2\right)^4}$$

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

$$\text{Sech}[2\,c]$$

$$\text{Sech}[c+d\,x]^8$$

$$\big(480\,a^6\,d\,x\,\text{Cosh}[2\,c]+3168\,a^5\,b\,d\,x\,\text{Cosh}[2\,c]+8928\,a^4\,b^2\,d\,x\,\text{Cosh}[2\,c]+$$
$$14112\,a^3\,b^3\,d\,x\,\text{Cosh}[2\,c]+13248\,a^2\,b^4\,d\,x\,\text{Cosh}[2\,c]+6912\,a\,b^5\,d\,x\,\text{Cosh}[2\,c]+$$
$$1536\,b^6\,d\,x\,\text{Cosh}[2\,c]+360\,a^6\,d\,x\,\text{Cosh}[2\,d\,x]+2232\,a^5\,b\,d\,x\,\text{Cosh}[2\,d\,x]+$$
$$5688\,a^4\,b^2\,d\,x\,\text{Cosh}[2\,d\,x]+7272\,a^3\,b^3\,d\,x\,\text{Cosh}[2\,d\,x]+4608\,a^2\,b^4\,d\,x\,\text{Cosh}[2\,d\,x]+$$
$$1152\,a\,b^5\,d\,x\,\text{Cosh}[2\,d\,x]+360\,a^6\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+2232\,a^5\,b\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+$$
$$5688\,a^4\,b^2\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+7272\,a^3\,b^3\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+$$
$$4608\,a^2\,b^4\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+1152\,a\,b^5\,d\,x\,\text{Cosh}[4\,c+2\,d\,x]+$$
$$144\,a^6\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+720\,a^5\,b\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+1296\,a^4\,b^2\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+$$
$$1008\,a^3\,b^3\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+288\,a^2\,b^4\,d\,x\,\text{Cosh}[2\,c+4\,d\,x]+$$
$$144\,a^6\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+720\,a^5\,b\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+1296\,a^4\,b^2\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+$$
$$1008\,a^3\,b^3\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+288\,a^2\,b^4\,d\,x\,\text{Cosh}[6\,c+4\,d\,x]+24\,a^6\,d\,x\,\text{Cosh}[4\,c+6\,d\,x]+$$
$$72\,a^5\,b\,d\,x\,\text{Cosh}[4\,c+6\,d\,x]+72\,a^4\,b^2\,d\,x\,\text{Cosh}[4\,c+6\,d\,x]+24\,a^3\,b^3\,d\,x\,\text{Cosh}[4\,c+6\,d\,x]+$$
$$24\,a^6\,d\,x\,\text{Cosh}[8\,c+6\,d\,x]+72\,a^5\,b\,d\,x\,\text{Cosh}[8\,c+6\,d\,x]+72\,a^4\,b^2\,d\,x\,\text{Cosh}[8\,c+6\,d\,x]+$$
$$24\,a^3\,b^3\,d\,x\,\text{Cosh}[8\,c+6\,d\,x]+870\,a^5\,b\,\text{Sinh}[2\,c]+4292\,a^4\,b^2\,\text{Sinh}[2\,c]+$$
$$8792\,a^3\,b^3\,\text{Sinh}[2\,c]+9936\,a^2\,b^4\,\text{Sinh}[2\,c]+5824\,a\,b^5\,\text{Sinh}[2\,c]+1408\,b^6\,\text{Sinh}[2\,c]-$$
$$870\,a^5\,b\,\text{Sinh}[2\,d\,x]-3792\,a^4\,b^2\,\text{Sinh}[2\,d\,x]-6432\,a^3\,b^3\,\text{Sinh}[2\,d\,x]-$$
$$4608\,a^2\,b^4\,\text{Sinh}[2\,d\,x]-1248\,a\,b^5\,\text{Sinh}[2\,d\,x]+435\,a^5\,b\,\text{Sinh}[4\,c+2\,d\,x]+$$
$$2124\,a^4\,b^2\,\text{Sinh}[4\,c+2\,d\,x]+3972\,a^3\,b^3\,\text{Sinh}[4\,c+2\,d\,x]+3072\,a^2\,b^4\,\text{Sinh}[4\,c+2\,d\,x]+$$
$$864\,a\,b^5\,\text{Sinh}[4\,c+2\,d\,x]-435\,a^5\,b\,\text{Sinh}[2\,c+4\,d\,x]-1374\,a^4\,b^2\,\text{Sinh}[2\,c+4\,d\,x]-$$
$$1248\,a^3\,b^3\,\text{Sinh}[2\,c+4\,d\,x]-384\,a^2\,b^4\,\text{Sinh}[2\,c+4\,d\,x]+87\,a^5\,b\,\text{Sinh}[6\,c+4\,d\,x]+$$
$$366\,a^4\,b^2\,\text{Sinh}[6\,c+4\,d\,x]+408\,a^3\,b^3\,\text{Sinh}[6\,c+4\,d\,x]+144\,a^2\,b^4\,\text{Sinh}[6\,c+4\,d\,x]-$$
$$87\,a^5\,b\,\text{Sinh}[4\,c+6\,d\,x]-116\,a^4\,b^2\,\text{Sinh}[4\,c+6\,d\,x]-44\,a^3\,b^3\,\text{Sinh}[4\,c+6\,d\,x]\big)$$

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):

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

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):

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

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):

$$\left(\sqrt{a+2b+a\,\text{Cosh}[2x]}\,\text{Log}\left[\sqrt{2}\,\sqrt{a}\,\text{Cosh}[x]+\sqrt{a+2b+a\,\text{Cosh}[2x]}\right]\text{Sech}[x]\right)\Big/\left(\sqrt{2}\,\sqrt{a}\,\sqrt{a+b\,\text{Sech}[x]^2}\right)+\frac{\left(a+2b+a\,\text{Cosh}[2x]\right)\text{Sech}[x]^2}{2b\sqrt{a+b\,\text{Sech}[x]^2}}$$

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):

$$\left(\sqrt{a+2b+a\,\text{Cosh}[2x]}\,\text{Log}\left[\sqrt{2}\,\sqrt{a}\,\text{Cosh}[x]+\sqrt{a+2b+a\,\text{Cosh}[2x]}\right]\text{Sech}[x]\right)\Big/\left(\sqrt{2}\,\sqrt{a}\,\sqrt{a+b\,\text{Sech}[x]^2}\right)$$

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):

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

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):

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

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):

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

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):

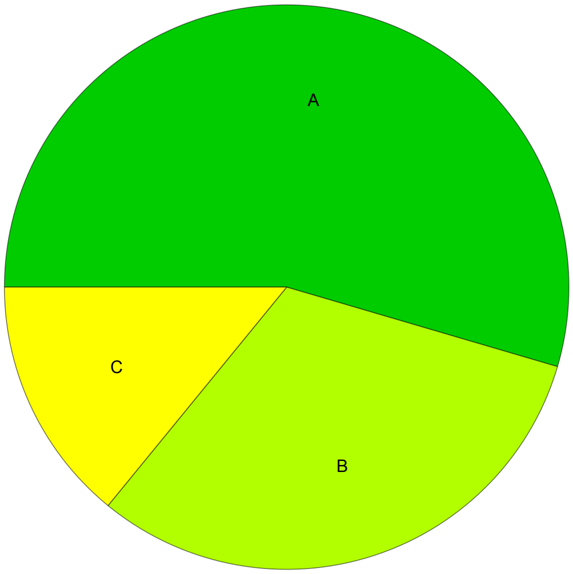
$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sech}[x]^2}}{\sqrt{a}}\right]}{a^{5/2}}-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sech}[x]^2}}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\frac{b}{3\,a\,(a+b)\,\left(a+b\,\text{Sech}[x]^2\right)^{3/2}}-\frac{b\,(2\,a+b)}{a^2\,(a+b)^2\,\sqrt{a+b\,\text{Sech}[x]^2}}$$

Result (type 3, 242 leaves):

$$\left(\left(-\frac{1}{3\,a^2\,(a+b)^2}2\,b\,\text{Cosh}[x]\,\left(a+2\,b+a\,\text{Cosh}[2\,x]\right)\,\left(7\,a^2+16\,a\,b+6\,b^2+a\,(7\,a+4\,b)\,\text{Cosh}[2\,x]\right)-\left(\left(a+2\,b+a\,\text{Cosh}[2\,x]\right)^{5/2}\left(\sqrt{a}\,\left(a^2-2\,a\,b-b^2\right)\,\text{ArcTanh}\left[\frac{\sqrt{2}\,\sqrt{a+b}\,\text{Cosh}[x]}{\sqrt{a+2\,b+a\,\text{Cosh}[2\,x]}}\right]+(a+b)^2\left(\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{2\,a+2\,b}\,\text{Cosh}[x]}{\sqrt{a+2\,b+a\,\text{Cosh}[2\,x]}}\right]-2\,\sqrt{a+b}\,\text{Log}\left[\sqrt{2}\,\sqrt{a}\,\text{Cosh}[x]+\sqrt{a+2\,b+a\,\text{Cosh}[2\,x]}\right]\right)\right)\right)\Big/\left(\sqrt{2}\,a^{5/2}\,(a+b)^{5/2}\right)\right)\,\text{Sech}[x]^5\right)\Big/\left(8\,\left(a+b\,\text{Sech}[x]^2\right)^{5/2}\right)$$

Summary of Integration Test Results

220 integration problems



A - 120 optimal antiderivatives

B - 69 more than twice size of optimal antiderivatives

C - 31 unnecessarily complex antiderivatives

D - 0 unable to integrate problems

E - 0 integration timeouts