Mathematica 11.3 Integration Test Results

Test results for the 369 problems in "6.1.5 Hyperbolic sine functions.m"

Problem 1: Result more than twice size of optimal antiderivative.

$$\int \text{Sinh}[a+b\,x]\,dx$$

Optimal (type 3, 10 leaves, 1 step):

$$\frac{\text{Cosh}[a+b\,x]}{b}$$

Result (type 3, 21 leaves):

$$\frac{\text{Cosh}[a]\,\text{Cosh}[b\,x]}{b}+\frac{\text{Sinh}[a]\,\text{Sinh}[b\,x]}{b}$$

Problem 43: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sinh}[x]}{i+\text{Sinh}[x]}\,dx$$

Optimal (type 3, 14 leaves, 2 steps):

$$x-\frac{\text{Cosh}[x]}{i+\text{Sinh}[x]}$$

Result (type 3, 29 leaves):

$$x-\frac{2\,\text{Sinh}\left[\frac{x}{2}\right]}{\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]}$$

Problem 44: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csch}[x]}{i+\text{Sinh}[x]}\,dx$$

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

$$i\,\text{ArcTanh}[\text{Cosh}[x]]+\frac{\text{Cosh}[x]}{i+\text{Sinh}[x]}$$

Result (type 3, 50 leaves):

$$i\,\text{Log}\left[\text{Cosh}\left[\frac{x}{2}\right]\right]-i\,\text{Log}\left[\text{Sinh}\left[\frac{x}{2}\right]\right]+\frac{2\,\text{Sinh}\left[\frac{x}{2}\right]}{\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]}$$

Problem 45: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Csch}[x]^2}{i+\text{Sinh}[x]}\,dx$$

Optimal (type 3, 23 leaves, 5 steps):

$$-\text{ArcTanh}[\text{Cosh}[x]]+2\,i\,\text{Coth}[x]+\frac{\text{Coth}[x]}{i+\text{Sinh}[x]}$$

Result (type 3, 70 leaves):

$$\frac{1}{2}\,i\,\text{Coth}\left[\frac{x}{2}\right]-\text{Log}\left[\text{Cosh}\left[\frac{x}{2}\right]\right]+\text{Log}\left[\text{Sinh}\left[\frac{x}{2}\right]\right]+\frac{2\,i\,\text{Sinh}\left[\frac{x}{2}\right]}{\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]}+\frac{1}{2}\,i\,\text{Tanh}\left[\frac{x}{2}\right]$$

Problem 46: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Csch}[x]^3}{i+\text{Sinh}[x]}\,dx$$

Optimal (type 3, 37 leaves, 6 steps):

$$-\frac{3}{2}\,i\,\text{ArcTanh}[\text{Cosh}[x]]-2\,\text{Coth}[x]+\frac{3}{2}\,i\,\text{Coth}[x]\,\text{Csch}[x]+\frac{\text{Coth}[x]\,\text{Csch}[x]}{i+\text{Sinh}[x]}$$

Result (type 3, 94 leaves):

$$\frac{1}{8}\left(-4\,\text{Coth}\left[\frac{x}{2}\right]+i\,\text{Csch}\left[\frac{x}{2}\right]^2-12\,i\,\text{Log}\left[\text{Cosh}\left[\frac{x}{2}\right]\right]+\right.$$
$$\left.12\,i\,\text{Log}\left[\text{Sinh}\left[\frac{x}{2}\right]\right]+i\,\text{Sech}\left[\frac{x}{2}\right]^2-\frac{16\,\text{Sinh}\left[\frac{x}{2}\right]}{\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]}-4\,\text{Tanh}\left[\frac{x}{2}\right]\right)$$

Problem 47: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 47 leaves, 6 steps):

$$\frac{3}{2}\,\text{ArcTanh}[\text{Cosh}[x]]-4\,i\,\text{Coth}[x]+\frac{4}{3}\,i\,\text{Coth}[x]^3-\frac{3}{2}\,\text{Coth}[x]\,\text{Csch}[x]+\frac{\text{Coth}[x]\,\text{Csch}[x]^2}{i+\text{Sinh}[x]}$$

Result (type 3, 124 leaves):

$$\frac{1}{24}\left(-20\,\mathrm{i}\,\mathrm{Coth}\left[\frac{x}{2}\right]-3\,\mathrm{Csch}\left[\frac{x}{2}\right]^2+36\,\mathrm{Log}\left[\mathrm{Cosh}\left[\frac{x}{2}\right]\right]-36\,\mathrm{Log}\left[\mathrm{Sinh}\left[\frac{x}{2}\right]\right]-3\,\mathrm{Sech}\left[\frac{x}{2}\right]^2-\frac{48\,\mathrm{i}\,\mathrm{Sinh}\left[\frac{x}{2}\right]}{\mathrm{Cosh}\left[\frac{x}{2}\right]-\mathrm{i}\,\mathrm{Sinh}\left[\frac{x}{2}\right]}-8\,\mathrm{i}\,\mathrm{Csch}[x]^3\,\mathrm{Sinh}\left[\frac{x}{2}\right]^4+\frac{1}{2}\,\mathrm{i}\,\mathrm{Csch}\left[\frac{x}{2}\right]^4\,\mathrm{Sinh}[x]-20\,\mathrm{i}\,\mathrm{Tanh}\left[\frac{x}{2}\right]\right)$$

Problem 50: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Sinh}[x]^2}{(\mathrm{i}+\mathrm{Sinh}[x])^2}\,dx$$

Optimal (type 3, 32 leaves, 3 steps):

$$x+\frac{\mathrm{i}\,\mathrm{Cosh}[x]}{3\,(\mathrm{i}+\mathrm{Sinh}[x])^2}-\frac{5\,\mathrm{Cosh}[x]}{3\,(\mathrm{i}+\mathrm{Sinh}[x])}$$

Result (type 3, 74 leaves):

$$\left(3\,(-4\,\mathrm{i}+3\,x)\,\mathrm{Cosh}\left[\frac{x}{2}\right]+(10\,\mathrm{i}-3\,x)\,\mathrm{Cosh}\left[\frac{3\,x}{2}\right]-6\,\mathrm{i}\,(-3\,\mathrm{i}+2\,x+x\,\mathrm{Cosh}[x])\,\mathrm{Sinh}\left[\frac{x}{2}\right]\right)\Big/\left(6\left(\mathrm{Cosh}\left[\frac{x}{2}\right]-\mathrm{i}\,\mathrm{Sinh}\left[\frac{x}{2}\right]\right)^3\right)$$

Problem 53: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Csch}[x]^2}{(\mathrm{i}+\mathrm{Sinh}[x])^2}\,dx$$

Optimal (type 3, 42 leaves, 6 steps):

$$2\,\mathrm{i}\,\mathrm{ArcTanh}[\mathrm{Cosh}[x]]+\frac{10\,\mathrm{Coth}[x]}{3}+\frac{\mathrm{Coth}[x]}{3\,(\mathrm{i}+\mathrm{Sinh}[x])^2}-\frac{2\,\mathrm{i}\,\mathrm{Coth}[x]}{\mathrm{i}+\mathrm{Sinh}[x]}$$

Result (type 3, 88 leaves):

$$\frac{1}{6}\left(3\,\mathrm{Coth}\left[\frac{x}{2}\right]+12\,\mathrm{i}\,\mathrm{Log}\left[\mathrm{Cosh}\left[\frac{x}{2}\right]\right]-12\,\mathrm{i}\,\mathrm{Log}\left[\mathrm{Sinh}\left[\frac{x}{2}\right]\right]+\frac{2}{\mathrm{i}+\mathrm{Sinh}[x]}-\frac{4\,\mathrm{Sinh}\left[\frac{x}{2}\right]\,(8\,\mathrm{i}+7\,\mathrm{Sinh}[x])}{\left(\mathrm{i}\,\mathrm{Cosh}\left[\frac{x}{2}\right]+\mathrm{Sinh}\left[\frac{x}{2}\right]\right)^3}+3\,\mathrm{Tanh}\left[\frac{x}{2}\right]\right)$$

Problem 54: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Csch}[x]^3}{(\mathrm{i}+\mathrm{Sinh}[x])^2}\,dx$$

Optimal (type 3, 58 leaves, 7 steps):

$$-\frac{7}{2}\,\text{ArcTanh}[\text{Cosh}[x]]+\frac{16}{3}\,i\,\text{Coth}[x]+\frac{7}{2}\,\text{Coth}[x]\,\text{Csch}[x]+\frac{\text{Coth}[x]\,\text{Csch}[x]}{3\,(i+\text{Sinh}[x])^2}-\frac{8\,i\,\text{Coth}[x]\,\text{Csch}[x]}{3\,(i+\text{Sinh}[x])}$$

Result (type 3, 140 leaves):

$$\frac{1}{24}\left(24\,i\,\text{Coth}\left[\frac{x}{2}\right]+3\,\text{Csch}\left[\frac{x}{2}\right]^2-84\,\text{Log}\left[\text{Cosh}\left[\frac{x}{2}\right]\right]+84\,\text{Log}\left[\text{Sinh}\left[\frac{x}{2}\right]\right]+3\,\text{Sech}\left[\frac{x}{2}\right]^2+\frac{8}{\left(\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]\right)^2}+\frac{160\,i\,\text{Sinh}\left[\frac{x}{2}\right]}{\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]}+\frac{16\,\text{Sinh}\left[\frac{x}{2}\right]}{\left(i\,\text{Cosh}\left[\frac{x}{2}\right]+\text{Sinh}\left[\frac{x}{2}\right]\right)^3}+24\,i\,\text{Tanh}\left[\frac{x}{2}\right]\right)$$

Problem 55: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Csch}[x]^4}{(i+\text{Sinh}[x])^2}\,dx$$

Optimal (type 3, 64 leaves, 7 steps):

$$-5\,i\,\text{ArcTanh}[\text{Cosh}[x]]-12\,\text{Coth}[x]+4\,\text{Coth}[x]^3+5\,i\,\text{Coth}[x]\,\text{Csch}[x]+\frac{\text{Coth}[x]\,\text{Csch}[x]^2}{3\,(i+\text{Sinh}[x])^2}-\frac{10\,i\,\text{Coth}[x]\,\text{Csch}[x]^2}{3\,(i+\text{Sinh}[x])}$$

Result (type 3, 143 leaves):

$$\frac{1}{24}\left(-44\,\text{Coth}\left[\frac{x}{2}\right]+6\,i\,\text{Csch}\left[\frac{x}{2}\right]^2+\frac{1}{2}\,\text{Csch}\left[\frac{x}{2}\right]^4\,\text{Sinh}[x]+2\left(-60\,i\,\text{Log}\left[\text{Cosh}\left[\frac{x}{2}\right]\right]+60\,i\,\text{Log}\left[\text{Sinh}\left[\frac{x}{2}\right]\right]+3\,i\,\text{Sech}\left[\frac{x}{2}\right]^2-4\,\text{Csch}[x]^3\,\text{Sinh}\left[\frac{x}{2}\right]^4-\frac{4}{i+\text{Sinh}[x]}+\frac{8\,\text{Sinh}\left[\frac{x}{2}\right]\,(14\,i+13\,\text{Sinh}[x])}{\left(i\,\text{Cosh}\left[\frac{x}{2}\right]+\text{Sinh}\left[\frac{x}{2}\right]\right)^3}-22\,\text{Tanh}\left[\frac{x}{2}\right]\right)\right)$$

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

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

Optimal (type 3, 31 leaves, 1 step):

$$\frac{2\,i\,a\,\text{Cosh}[c+d\,x]}{d\,\sqrt{a+i\,a\,\text{Sinh}[c+d\,x]}}$$

Result (type 3, 74 leaves):

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

Problem 92: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{5+3\,i\,\text{Sinh}[c+d\,x]}\,dx$$

Optimal (type 3, 37 leaves, 1 step):

$$\frac{x}{4}-\frac{i\,\text{ArcTan}\left[\frac{\text{Cosh}[c+d\,x]}{3+i\,\text{Sinh}[c+d\,x]}\right]}{2\,d}$$

Result (type 3, 171 leaves):

$$-\frac{i\,\text{ArcTan}\left[\frac{2\,\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]}{\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]-2\,\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]}\right]}{4\,d}+\frac{i\,\text{ArcTan}\left[\frac{\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]+2\,\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]}{2\,\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]}\right]}{4\,d}-\frac{\text{Log}[5\,\text{Cosh}[c+d\,x]-4\,\text{Sinh}[c+d\,x]]}{8\,d}+\frac{\text{Log}[5\,\text{Cosh}[c+d\,x]+4\,\text{Sinh}[c+d\,x]]}{8\,d}$$

Problem 93: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(5+3\,i\,\text{Sinh}[c+d\,x]\right)^2}\,dx$$

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

$$\frac{5\,x}{64}-\frac{5\,i\,\text{ArcTan}\left[\frac{\text{Cosh}[c+d\,x]}{3+i\,\text{Sinh}[c+d\,x]}\right]}{32\,d}-\frac{3\,i\,\text{Cosh}[c+d\,x]}{16\,d\,\left(5+3\,i\,\text{Sinh}[c+d\,x]\right)}$$

Result (type 3, 183 leaves):

$$\frac{1}{640\,d}\left(24\,i-50\,i\,\text{ArcTan}\left[\frac{2\,\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]}{\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]-2\,\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]}\right]+50\,i\,\text{ArcTan}\left[\frac{\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]+2\,\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]}{2\,\text{Cosh}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sinh}\left[\frac{1}{2}(c+d\,x)\right]}\right]-25\,\text{Log}[5\,\text{Cosh}[c+d\,x]-4\,\text{Sinh}[c+d\,x]]+25\,\text{Log}[5\,\text{Cosh}[c+d\,x]+4\,\text{Sinh}[c+d\,x]]-\frac{120\,\text{Cosh}[c+d\,x]}{-5\,i+3\,\text{Sinh}[c+d\,x]}\right)$$

Problem 94: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(5+3\,i\,\text{Sinh}[c+d\,x]\right)^3}\,dx$$

Optimal (type 3, 95 leaves, 4 steps):

$$\frac{59\,x}{2048}-\frac{59\,i\,\text{ArcTan}\left[\frac{\text{Cosh}[c+d\,x]}{3+i\,\text{Sinh}[c+d\,x]}\right]}{1024\,d}-\frac{3\,i\,\text{Cosh}[c+d\,x]}{32\,d\,\left(5+3\,i\,\text{Sinh}[c+d\,x]\right)^2}-\frac{45\,i\,\text{Cosh}[c+d\,x]}{512\,d\,\left(5+3\,i\,\text{Sinh}[c+d\,x]\right)}$$

Result (type 3, 277 leaves):

$$\frac{1}{4096\,d}\left(-118\,i\,\text{ArcTan}\left[\frac{2\,\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-2\,\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]}\right]+118\,i\,\text{ArcTan}\left[\frac{\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]}{2\,\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]}\right]-59\,\text{Log}[5\,\text{Cosh}[c+d\,x]-4\,\text{Sinh}[c+d\,x]]+59\,\text{Log}[5\,\text{Cosh}[c+d\,x]+4\,\text{Sinh}[c+d\,x]]+\frac{48}{\left((1+2\,i)\,\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]-(2+i)\,\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{48}{\left((2+i)\,\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]+(1+2\,i)\,\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\left(144\,\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\left(-3\,i\,\text{Cosh}\left[\frac{1}{2}\,(c+d\,x)\right]+5\,\text{Sinh}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/\left(-5\,i+3\,\text{Sinh}[c+d\,x]\right)\right)$$

Problem 95: Result more than twice size of optimal antiderivative.

$$\int\frac{1}{(5+3\,i\,\text{Sinh}[c+d\,x])^4}\,dx$$

Optimal (type 3, 124 leaves, 5 steps):

$$\frac{385\,x}{32768}-\frac{385\,i\,\text{ArcTan}\left[\frac{\text{Cosh}[c+d\,x]}{3+i\,\text{Sinh}[c+d\,x]}\right]}{16384\,d}-\frac{i\,\text{Cosh}[c+d\,x]}{16\,d\,(5+3\,i\,\text{Sinh}[c+d\,x])^3}-\frac{25\,i\,\text{Cosh}[c+d\,x]}{512\,d\,(5+3\,i\,\text{Sinh}[c+d\,x])^2}-\frac{311\,i\,\text{Cosh}[c+d\,x]}{8192\,d\,(5+3\,i\,\text{Sinh}[c+d\,x])}$$

Result (type 3, 308 leaves):

$$\frac{1}{327680\, d}\left(-3850\, i\, \text{ArcTan}\left[\frac{2\,\text{Cosh}\left[\frac{1}{2}(c+d x)\right]-\text{Sinh}\left[\frac{1}{2}(c+d x)\right]}{\text{Cosh}\left[\frac{1}{2}(c+d x)\right]-2\,\text{Sinh}\left[\frac{1}{2}(c+d x)\right]}\right]+ 3850\, i\, \text{ArcTan}\left[\frac{\text{Cosh}\left[\frac{1}{2}(c+d x)\right]+2\,\text{Sinh}\left[\frac{1}{2}(c+d x)\right]}{2\,\text{Cosh}\left[\frac{1}{2}(c+d x)\right]+\text{Sinh}\left[\frac{1}{2}(c+d x)\right]}\right]- 1925\,\text{Log}[5\,\text{Cosh}[c+d x]-4\,\text{Sinh}[c+d x]]+1925\,\text{Log}[5\,\text{Cosh}[c+d x]+4\,\text{Sinh}[c+d x]]+ \frac{2656-192\, i}{\left((1+2 i)\,\text{Cosh}\left[\frac{1}{2}(c+d x)\right]-(2+i)\,\text{Sinh}\left[\frac{1}{2}(c+d x)\right]\right)^2}+ \frac{2656+192\, i}{\left((2+i)\,\text{Cosh}\left[\frac{1}{2}(c+d x)\right]+(1+2 i)\,\text{Sinh}\left[\frac{1}{2}(c+d x)\right]\right)^2}+ \left(2\left(-235150+166615\,\text{Cosh}[c+d x]+82530\,\text{Cosh}[2(c+d x)]- 13995\,\text{Cosh}[3(c+d x)]-298563\, i\,\text{Sinh}[c+d x]+89364\, i\,\text{Sinh}[2(c+d x)]+ 8397\, i\,\text{Sinh}[3(c+d x)]\right)\right)\Big/\left(-5\, i+3\,\text{Sinh}[c+d x]\right)^3\right)$$

Problem 119: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Sinh}[x]}{i-\text{Sinh}[x]}\, dx$$

Optimal (type 3, 27 leaves, 2 steps):

$$-B x+\frac{(i A-B)\,\text{Cosh}[x]}{i-\text{Sinh}[x]}$$

Result (type 3, 59 leaves):

$$\frac{\left(i\,\text{Cosh}\left[\frac{x}{2}\right]-\text{Sinh}\left[\frac{x}{2}\right]\right)\left(B x\,\text{Cosh}\left[\frac{x}{2}\right]+i\,(2 A+B(2 i+x))\,\text{Sinh}\left[\frac{x}{2}\right]\right)}{-i+\text{Sinh}[x]}$$

Problem 167: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sech}[x]^2}{i+\text{Sinh}[x]}\, dx$$

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

$$-\frac{i\,\text{Sech}[x]}{3\,(i+\text{Sinh}[x])}-\frac{2}{3}\, i\,\text{Tanh}[x]$$

Result (type 3, 65 leaves):

$$\frac{\text{Cosh}[x]-2\,\text{Cosh}[2 x]-4\, i\,\text{Sinh}[x]-i\,\text{Cosh}[x]\,\text{Sinh}[x]}{6\left(\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]\right)^3\left(\text{Cosh}\left[\frac{x}{2}\right]+i\,\text{Sinh}\left[\frac{x}{2}\right]\right)}$$

Problem 169: Result more than twice size of optimal antiderivative.

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

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

$$-\frac{i \,\text{Sech}[x]^3}{5 \left(i + \text{Sinh}[x]\right)} - \frac{4}{5} i \,\text{Tanh}[x] + \frac{4}{15} i \,\text{Tanh}[x]^3$$

Result (type 3, 95 leaves):

$$-\left(\left(-54 \,\text{Cosh}[x] + 128 \,\text{Cosh}[2 x] - 18 \,\text{Cosh}[3 x] + 64 \,\text{Cosh}[4 x] + 384 i \,\text{Sinh}[x] + 18 i \,\text{Sinh}[2 x] + 128 i \,\text{Sinh}[3 x] + 9 i \,\text{Sinh}[4 x]\right) \Big/ \left(960 \left(\text{Cosh}\left[\frac{x}{2}\right] - i \,\text{Sinh}\left[\frac{x}{2}\right]\right)^5 \left(\text{Cosh}\left[\frac{x}{2}\right] + i \,\text{Sinh}\left[\frac{x}{2}\right]\right)^3\right)\right)$$

Problem 175: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cosh}[x]^2}{\left(i + \text{Sinh}[x]\right)^2} \, dx$$

Optimal (type 3, 14 leaves, 2 steps):

$$x - \frac{2 \,\text{Cosh}[x]}{i + \text{Sinh}[x]}$$

Result (type 3, 29 leaves):

$$x - \frac{4 \,\text{Sinh}\left[\frac{x}{2}\right]}{\text{Cosh}\left[\frac{x}{2}\right] - i \,\text{Sinh}\left[\frac{x}{2}\right]}$$

Problem 178: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 37 leaves, 4 steps):

$$-\frac{i \,\text{Sech}[x]}{5 \left(i + \text{Sinh}[x]\right)^2} - \frac{\text{Sech}[x]}{5 \left(i + \text{Sinh}[x]\right)} - \frac{2 \,\text{Tanh}[x]}{5}$$

Result (type 3, 81 leaves):

$$\left(-15 i \,\text{Cosh}[x] + 32 i \,\text{Cosh}[2 x] + 3 i \,\text{Cosh}[3 x] - 40 \,\text{Sinh}[x] - 12 \,\text{Sinh}[2 x] + 8 \,\text{Sinh}[3 x]\right) \Big/ \left(80 \left(\text{Cosh}\left[\frac{x}{2}\right] - i \,\text{Sinh}\left[\frac{x}{2}\right]\right)^5 \left(\text{Cosh}\left[\frac{x}{2}\right] + i \,\text{Sinh}\left[\frac{x}{2}\right]\right)\right)$$

Problem 180: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 49 leaves, 4 steps):

$$-\frac{i\,\text{Sech}[x]^3}{7\,(i+\text{Sinh}[x])^2}-\frac{\text{Sech}[x]^3}{7\,(i+\text{Sinh}[x])}-\frac{4\,\text{Tanh}[x]}{7}+\frac{4\,\text{Tanh}[x]^3}{21}$$

Result (type 3, 109 leaves):

$$-\Big((210\,i\,\text{Cosh}[x]-512\,i\,\text{Cosh}[2\,x]+45\,i\,\text{Cosh}[3\,x]-256\,i\,\text{Cosh}[4\,x]-15\,i\,\text{Cosh}[5\,x]+896\,\text{Sinh}[x]+120\,\text{Sinh}[2\,x]+192\,\text{Sinh}[3\,x]+60\,\text{Sinh}[4\,x]-64\,\text{Sinh}[5\,x])\Big/\left(2688\left(\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]\right)^7\left(\text{Cosh}\left[\frac{x}{2}\right]+i\,\text{Sinh}\left[\frac{x}{2}\right]\right)^3\right)\Big)$$

Problem 206: Result unnecessarily involves imaginary or complex numbers.

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

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

$$\frac{(a^4+6\,a^2\,b^2-3\,b^4)\,\text{ArcTan}[\text{Sinh}[x]]}{2\,(a^2+b^2)^3}-\frac{4\,a\,b^3\,\text{Log}[\text{Cosh}[x]]}{(a^2+b^2)^3}+\frac{4\,a\,b^3\,\text{Log}[a+b\,\text{Sinh}[x]]}{(a^2+b^2)^3}+\frac{b\,(a^2-3\,b^2)}{2\,(a^2+b^2)^2\,(a+b\,\text{Sinh}[x])}+\frac{\text{Sech}[x]^2\,(b+a\,\text{Sinh}[x])}{2\,(a^2+b^2)\,(a+b\,\text{Sinh}[x])}$$

Result (type 3, 171 leaves):

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

Problem 208: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 31 leaves, 6 steps):

$$-\text{Sech}[x]+\frac{2\,\text{Sech}[x]^3}{3}-\frac{\text{Sech}[x]^5}{5}-\frac{1}{5}\,i\,\text{Tanh}[x]^5$$

Result (type 3, 96 leaves):

$$-\left(\left(200-534\,\text{Cosh}[x]+288\,\text{Cosh}[2x]-178\,\text{Cosh}[3x]+24\,\text{Cosh}[4x]+64\,i\,\text{Sinh}[x]+178\,i\,\text{Sinh}[2x]-192\,i\,\text{Sinh}[3x]+89\,i\,\text{Sinh}[4x]\right)\Big/\left(960\left(\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]\right)^5\left(\text{Cosh}\left[\frac{x}{2}\right]+i\,\text{Sinh}\left[\frac{x}{2}\right]\right)^3\right)\right)$$

Problem 210: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Tanh}[x]^2}{i+\text{Sinh}[x]}\,dx$$

Optimal (type 3, 23 leaves, 5 steps):

$$-\text{Sech}[x]+\frac{\text{Sech}[x]^3}{3}-\frac{1}{3}\,i\,\text{Tanh}[x]^3$$

Result (type 3, 67 leaves):

$$\frac{-3-\text{Cosh}[2x]+\text{Cosh}[x]\left(5-5\,i\,\text{Sinh}[x]\right)+4\,i\,\text{Sinh}[x]}{6\left(\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]\right)^3\left(\text{Cosh}\left[\frac{x}{2}\right]+i\,\text{Sinh}\left[\frac{x}{2}\right]\right)}$$

Problem 213: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Coth}[x]^2}{i+\text{Sinh}[x]}\,dx$$

Optimal (type 3, 12 leaves, 4 steps):

$$-\text{ArcTanh}[\text{Cosh}[x]]+i\,\text{Coth}[x]$$

Result (type 3, 41 leaves):

$$\frac{1}{2}\,i\,\text{Coth}\left[\frac{x}{2}\right]-\text{Log}\left[\text{Cosh}\left[\frac{x}{2}\right]\right]+\text{Log}\left[\text{Sinh}\left[\frac{x}{2}\right]\right]+\frac{1}{2}\,i\,\text{Tanh}\left[\frac{x}{2}\right]$$

Problem 214: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Coth}[x]^3}{i+\text{Sinh}[x]}\,dx$$

Optimal (type 3, 15 leaves, 5 steps):

$$-\text{Csch}[x]+\frac{1}{2}\,i\,\text{Csch}[x]^2$$

Result (type 3, 49 leaves):

$$-\frac{1}{2}\,\text{Coth}\left[\frac{x}{2}\right]+\frac{1}{8}\,i\,\text{Csch}\left[\frac{x}{2}\right]^2-\frac{1}{8}\,i\,\text{Sech}\left[\frac{x}{2}\right]^2+\frac{1}{2}\,\text{Tanh}\left[\frac{x}{2}\right]$$

Problem 215: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 26 leaves, 5 steps):

$$-\frac{1}{2}\,\text{ArcTanh}[\text{Cosh}[x]] + \frac{1}{3}\,i\,\text{Coth}[x]^3 - \frac{1}{2}\,\text{Coth}[x]\,\text{Csch}[x]$$

Result (type 3, 111 leaves):

$$\frac{1}{6}\,i\,\text{Coth}\left[\frac{x}{2}\right] - \frac{1}{8}\,\text{Csch}\left[\frac{x}{2}\right]^2 + \frac{1}{24}\,i\,\text{Coth}\left[\frac{x}{2}\right]\,\text{Csch}\left[\frac{x}{2}\right]^2 - \frac{1}{2}\,\text{Log}\left[\text{Cosh}\left[\frac{x}{2}\right]\right] + \frac{1}{2}\,\text{Log}\left[\text{Sinh}\left[\frac{x}{2}\right]\right] - \frac{1}{8}\,\text{Sech}\left[\frac{x}{2}\right]^2 + \frac{1}{6}\,i\,\text{Tanh}\left[\frac{x}{2}\right] - \frac{1}{24}\,i\,\text{Sech}\left[\frac{x}{2}\right]^2\,\text{Tanh}\left[\frac{x}{2}\right]$$

Problem 216: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Coth}[x]^5}{i + \text{Sinh}[x]}\, dx$$

Optimal (type 3, 23 leaves, 5 steps):

$$\frac{1}{4}\,i\,\text{Coth}[x]^4 - \text{Csch}[x] - \frac{\text{Csch}[x]^3}{3}$$

Result (type 3, 113 leaves):

$$-\frac{5}{12}\,\text{Coth}\left[\frac{x}{2}\right] + \frac{3}{32}\,i\,\text{Csch}\left[\frac{x}{2}\right]^2 - \frac{1}{24}\,\text{Coth}\left[\frac{x}{2}\right]\,\text{Csch}\left[\frac{x}{2}\right]^2 + \frac{1}{64}\,i\,\text{Csch}\left[\frac{x}{2}\right]^4 - \frac{3}{32}\,i\,\text{Sech}\left[\frac{x}{2}\right]^2 + \frac{1}{64}\,i\,\text{Sech}\left[\frac{x}{2}\right]^4 + \frac{5}{12}\,\text{Tanh}\left[\frac{x}{2}\right] - \frac{1}{24}\,\text{Sech}\left[\frac{x}{2}\right]^2\,\text{Tanh}\left[\frac{x}{2}\right]$$

Problem 217: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Coth}[x]^6}{i + \text{Sinh}[x]}\, dx$$

Optimal (type 3, 36 leaves, 6 steps):

$$-\frac{3}{8}\,\text{ArcTanh}[\text{Cosh}[x]] + \frac{1}{5}\,i\,\text{Coth}[x]^5 - \frac{3}{8}\,\text{Coth}[x]\,\text{Csch}[x] - \frac{1}{4}\,\text{Coth}[x]^3\,\text{Csch}[x]$$

Result (type 3, 175 leaves):

$$\frac{1}{10}\,i\,\text{Coth}\left[\frac{x}{2}\right] - \frac{5}{32}\,\text{Csch}\left[\frac{x}{2}\right]^2 + \frac{7}{160}\,i\,\text{Coth}\left[\frac{x}{2}\right]\,\text{Csch}\left[\frac{x}{2}\right]^2 - \frac{1}{64}\,\text{Csch}\left[\frac{x}{2}\right]^4 + \frac{1}{160}\,i\,\text{Coth}\left[\frac{x}{2}\right]\,\text{Csch}\left[\frac{x}{2}\right]^4 - \frac{3}{8}\,\text{Log}\left[\text{Cosh}\left[\frac{x}{2}\right]\right] + \frac{3}{8}\,\text{Log}\left[\text{Sinh}\left[\frac{x}{2}\right]\right] - \frac{5}{32}\,\text{Sech}\left[\frac{x}{2}\right]^2 + \frac{1}{64}\,\text{Sech}\left[\frac{x}{2}\right]^4 + \frac{1}{10}\,i\,\text{Tanh}\left[\frac{x}{2}\right] - \frac{7}{160}\,i\,\text{Sech}\left[\frac{x}{2}\right]^2\,\text{Tanh}\left[\frac{x}{2}\right] + \frac{1}{160}\,i\,\text{Sech}\left[\frac{x}{2}\right]^4\,\text{Tanh}\left[\frac{x}{2}\right]$$

Problem 218: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tanh}[x]^4}{(i+\text{Sinh}[x])^2}\,dx$$

Optimal (type 3, 47 leaves, 10 steps):

$$\frac{2}{3}\,i\,\text{Sech}[x]^3-\frac{4}{5}\,i\,\text{Sech}[x]^5+\frac{2}{7}\,i\,\text{Sech}[x]^7-\frac{\text{Tanh}[x]^5}{5}+\frac{2\,\text{Tanh}[x]^7}{7}$$

Result (type 3, 112 leaves):

$$-\left(\left(-672\,i+1442\,i\,\text{Cosh}[x]-1664\,i\,\text{Cosh}[2\,x]+309\,i\,\text{Cosh}[3\,x]+288\,i\,\text{Cosh}[4\,x]-103\,i\,\text{Cosh}[5\,x]+1232\,\text{Sinh}[x]+824\,\text{Sinh}[2\,x]-1896\,\text{Sinh}[3\,x]+412\,\text{Sinh}[4\,x]+72\,\text{Sinh}[5\,x]\right)\Big/\left(13440\left(\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]\right)^7\left(\text{Cosh}\left[\frac{x}{2}\right]+i\,\text{Sinh}\left[\frac{x}{2}\right]\right)^3\right)\right)$$

Problem 220: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tanh}[x]^2}{(i+\text{Sinh}[x])^2}\,dx$$

Optimal (type 3, 37 leaves, 10 steps):

$$\frac{2}{3}\,i\,\text{Sech}[x]^3-\frac{2}{5}\,i\,\text{Sech}[x]^5-\frac{\text{Tanh}[x]^3}{3}+\frac{2\,\text{Tanh}[x]^5}{5}$$

Result (type 3, 84 leaves):

$$\left(80\,i-55\,i\,\text{Cosh}[x]-16\,i\,\text{Cosh}[2\,x]+11\,i\,\text{Cosh}[3\,x]+140\,\text{Sinh}[x]-44\,\text{Sinh}[2\,x]-4\,\text{Sinh}[3\,x]\right)\Big/\left(240\left(\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]\right)^5\left(\text{Cosh}\left[\frac{x}{2}\right]+i\,\text{Sinh}\left[\frac{x}{2}\right]\right)\right)$$

Problem 223: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Coth}[x]^2}{(i+\text{Sinh}[x])^2}\,dx$$

Optimal (type 3, 26 leaves, 7 steps):

$$2\,i\,\text{ArcTanh}[\text{Cosh}[x]]+\text{Coth}[x]+\frac{2\,i\,\text{Coth}[x]}{i-\text{Csch}[x]}$$

Result (type 3, 66 leaves):

$$\frac{1}{2}\left(\text{Coth}\left[\frac{x}{2}\right]+4\,i\,\text{Log}\left[\text{Cosh}\left[\frac{x}{2}\right]\right]-4\,i\,\text{Log}\left[\text{Sinh}\left[\frac{x}{2}\right]\right]+\frac{8\,\text{Sinh}\left[\frac{x}{2}\right]}{\text{Cosh}\left[\frac{x}{2}\right]-i\,\text{Sinh}\left[\frac{x}{2}\right]}+\text{Tanh}\left[\frac{x}{2}\right]\right)$$

Problem 224: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Coth}[x]^3}{(i+\text{Sinh}[x])^2}\,dx$$

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

$$2\,i\,\text{Csch}[x]+\frac{\text{Csch}[x]^2}{2}+2\,\text{Log}[\text{Sinh}[x]]-2\,\text{Log}[i+\text{Sinh}[x]]$$

Result (type 3, 66 leaves):

$$-4\,i\,\text{ArcTan}\left[\text{Coth}\left[\frac{x}{2}\right]\right]+i\,\text{Coth}\left[\frac{x}{2}\right]+\frac{1}{8}\,\text{Csch}\left[\frac{x}{2}\right]^2-2\,\text{Log}[\text{Cosh}[x]]+2\,\text{Log}[\text{Sinh}[x]]-\frac{1}{8}\,\text{Sech}\left[\frac{x}{2}\right]^2-i\,\text{Tanh}\left[\frac{x}{2}\right]$$

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

$$\int \frac{\text{Coth}[x]^4}{(i+\text{Sinh}[x])^2}\,dx$$

Optimal (type 3, 28 leaves, 9 steps):

$$-i\,\text{ArcTanh}[\text{Cosh}[x]]-2\,\text{Coth}[x]+\frac{\text{Coth}[x]^3}{3}+i\,\text{Coth}[x]\,\text{Csch}[x]$$

Result (type 3, 107 leaves):

$$-\frac{5}{6}\,\text{Coth}\left[\frac{x}{2}\right]+\frac{1}{4}\,i\,\text{Csch}\left[\frac{x}{2}\right]^2+\frac{1}{24}\,\text{Coth}\left[\frac{x}{2}\right]\,\text{Csch}\left[\frac{x}{2}\right]^2-i\,\text{Log}\left[\text{Cosh}\left[\frac{x}{2}\right]\right]+i\,\text{Log}\left[\text{Sinh}\left[\frac{x}{2}\right]\right]+\frac{1}{4}\,i\,\text{Sech}\left[\frac{x}{2}\right]^2-\frac{5}{6}\,\text{Tanh}\left[\frac{x}{2}\right]-\frac{1}{24}\,\text{Sech}\left[\frac{x}{2}\right]^2\,\text{Tanh}\left[\frac{x}{2}\right]$$

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

$$\int \frac{\text{Coth}[x]^5}{(i+\text{Sinh}[x])^2}\,dx$$

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

$$-\frac{1}{2}\,\text{Csch}[x]^2+\frac{2}{3}\,i\,\text{Csch}[x]^3+\frac{\text{Csch}[x]^4}{4}$$

Result (type 3, 113 leaves):

$$-\frac{1}{6}\,i\,\text{Coth}\left[\frac{x}{2}\right]-\frac{5}{32}\,\text{Csch}\left[\frac{x}{2}\right]^2+\frac{1}{12}\,i\,\text{Coth}\left[\frac{x}{2}\right]\,\text{Csch}\left[\frac{x}{2}\right]^2+\frac{1}{64}\,\text{Csch}\left[\frac{x}{2}\right]^4+\frac{5}{32}\,\text{Sech}\left[\frac{x}{2}\right]^2+\frac{1}{64}\,\text{Sech}\left[\frac{x}{2}\right]^4+\frac{1}{6}\,i\,\text{Tanh}\left[\frac{x}{2}\right]+\frac{1}{12}\,i\,\text{Sech}\left[\frac{x}{2}\right]^2\,\text{Tanh}\left[\frac{x}{2}\right]$$

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

$$\int \frac{\text{Coth}[x]^6}{(i + \text{Sinh}[x])^2} \, dx$$

Optimal (type 3, 48 leaves, 11 steps):

$$-\frac{1}{4} i \,\text{ArcTanh}[\text{Cosh}[x]] - \frac{2\,\text{Coth}[x]^3}{3} + \frac{\text{Coth}[x]^5}{5} + \frac{1}{4} i \,\text{Coth}[x]\,\text{Csch}[x] + \frac{1}{2} i \,\text{Coth}[x]\,\text{Csch}[x]^3$$

Result (type 3, 175 leaves):

$$-\frac{7}{30}\text{Coth}\left[\frac{x}{2}\right] + \frac{1}{16} i \,\text{Csch}\left[\frac{x}{2}\right]^2 - \frac{19}{480}\text{Coth}\left[\frac{x}{2}\right]\text{Csch}\left[\frac{x}{2}\right]^2 + \frac{1}{32} i \,\text{Csch}\left[\frac{x}{2}\right]^4 + \frac{1}{160}\text{Coth}\left[\frac{x}{2}\right]\text{Csch}\left[\frac{x}{2}\right]^4 - \frac{1}{4} i \,\text{Log}\left[\text{Cosh}\left[\frac{x}{2}\right]\right] + \frac{1}{4} i \,\text{Log}\left[\text{Sinh}\left[\frac{x}{2}\right]\right] + \frac{1}{16} i \,\text{Sech}\left[\frac{x}{2}\right]^2 - \frac{1}{32} i \,\text{Sech}\left[\frac{x}{2}\right]^4 - \frac{7}{30}\text{Tanh}\left[\frac{x}{2}\right] + \frac{19}{480}\text{Sech}\left[\frac{x}{2}\right]^2\text{Tanh}\left[\frac{x}{2}\right] + \frac{1}{160}\text{Sech}\left[\frac{x}{2}\right]^4\text{Tanh}\left[\frac{x}{2}\right]$$

Problem 237: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 135 leaves, 7 steps):

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

Result (type 3, 156 leaves):

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

Problem 244: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 37 leaves, 4 steps):

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

Result (type 3, 75 leaves):

$$\frac{1}{b+a\,\text{Csch}[x]}2\left(b+a\,\text{Csch}[x]-\sqrt{a}\,\sqrt{b}\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\sqrt{\text{Csch}[x]}}{\sqrt{b}}\right]\sqrt{\text{Csch}[x]}\,\sqrt{1+\frac{a\,\text{Csch}[x]}{b}}\right)\sqrt{a+b\,\text{Sinh}[x]}$$

Problem 245: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 24 leaves, 3 steps):

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

Result (type 3, 59 leaves):

$$-\frac{2\sqrt{b}\,\text{ArcSinh}\left[\frac{\sqrt{a}\,\sqrt{\text{Csch}[x]}}{\sqrt{b}}\right]\sqrt{1+\frac{a\,\text{Csch}[x]}{b}}}{\sqrt{a}\,\sqrt{\text{Csch}[x]}\,\sqrt{a+b\,\text{Sinh}[x]}}$$

Problem 248: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Cosh}[x]}{i-\text{Sinh}[x]}\,dx$$

Optimal (type 3, 27 leaves, 5 steps):

$$-B\,\text{Log}[i-\text{Sinh}[x]]+\frac{A\,\text{Cosh}[x]}{1+i\,\text{Sinh}[x]}$$

Result (type 3, 81 leaves):

$$-\frac{1}{-i+\text{Sinh}[x]}\left(\text{Cosh}\left[\frac{x}{2}\right]+i\,\text{Sinh}\left[\frac{x}{2}\right]\right)\left(B\,\text{Cosh}\left[\frac{x}{2}\right]\left(2\,\text{ArcTan}\left[\text{Tanh}\left[\frac{x}{2}\right]\right]-i\,\text{Log}[\text{Cosh}[x]]\right)+\left(2\,A+2\,i\,B\,\text{ArcTan}\left[\text{Tanh}\left[\frac{x}{2}\right]\right]+B\,\text{Log}[\text{Cosh}[x]]\right)\text{Sinh}\left[\frac{x}{2}\right]\right)$$

Problem 249: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A+B\,\text{Tanh}[x]}{a+b\,\text{Sinh}[x]}\,dx$$

Optimal (type 3, 89 leaves, 11 steps):

$$\frac{b\,B\,\text{ArcTan}[\text{Sinh}[x]]}{a^2+b^2}-\frac{2\,A\,\text{ArcTanh}\left[\frac{b-a\,\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{a^2+b^2}}\right]}{\sqrt{a^2+b^2}}+\frac{a\,B\,\text{Log}[\text{Cosh}[x]]}{a^2+b^2}-\frac{a\,B\,\text{Log}[a+b\,\text{Sinh}[x]]}{a^2+b^2}$$

Result (type 3, 149 leaves):

$$\left(\text{Cosh}[x]\left(2\,b\,\sqrt{-a^2-b^2}\;B\,\text{ArcTan}\left[\text{Tanh}\left[\frac{x}{2}\right]\right]+2\,A\left(a^2+b^2\right)\text{ArcTan}\left[\frac{b-a\,\text{Tanh}\left[\frac{x}{2}\right]}{\sqrt{-a^2-b^2}}\right]+a\,\sqrt{-a^2-b^2}\;B\left(\text{Log}[\text{Cosh}[x]]-\text{Log}[a+b\,\text{Sinh}[x]]\right)\right)\left(A+B\,\text{Tanh}[x]\right)\right)\Big/\left(\left(a-\mathrm{i}\,b\right)\left(a+\mathrm{i}\,b\right)\sqrt{-a^2-b^2}\left(A\,\text{Cosh}[x]+B\,\text{Sinh}[x]\right)\right)$$

Problem 259: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 215 leaves, 9 steps):

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

Result (type 4, 576 leaves):

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

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

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

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

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

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

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

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

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

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

Problem 274: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 18 leaves, 2 steps):

$$\frac{\text{Cosh}[a+b\,\text{Log}[c\,x^n]]}{b\,n}$$

Result (type 3, 37 leaves):

$$\frac{\text{Cosh}[a]\,\text{Cosh}[b\,\text{Log}[c\,x^n]]}{b\,n}+\frac{\text{Sinh}[a]\,\text{Sinh}[b\,\text{Log}[c\,x^n]]}{b\,n}$$

Problem 295: Result more than twice size of optimal antiderivative.

$$\int \text{Sinh}\left[\frac{a+b x}{c+d x}\right] dx$$

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

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

Result (type 4, 373 leaves):

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

Problem 297: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 194 leaves, 9 steps):

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

Result (type 4, 599 leaves):

$$\frac{1}{8 d^2}\left(6 (b c-a d) \text{Cosh}\left[\frac{3 b}{d}\right] \text{CoshIntegral}\left[\frac{3 (-b c+a d)}{d (c+d x)}\right]-\right.$$
$$3 b c \text{Cosh}\left[\frac{b}{d}\right] \text{CoshIntegral}\left[\frac{b c-a d}{c d+d^2 x}\right]+3 a d \text{Cosh}\left[\frac{b}{d}\right] \text{CoshIntegral}\left[\frac{b c-a d}{c d+d^2 x}\right]+$$
$$3 b c \text{CoshIntegral}\left[\frac{b c-a d}{c d+d^2 x}\right] \text{Sinh}\left[\frac{b}{d}\right]-3 a d \text{CoshIntegral}\left[\frac{b c-a d}{c d+d^2 x}\right] \text{Sinh}\left[\frac{b}{d}\right]-$$
$$3 (b c-a d) \text{CoshIntegral}\left[\frac{-b c+a d}{d (c+d x)}\right]\left(\text{Cosh}\left[\frac{b}{d}\right]+\text{Sinh}\left[\frac{b}{d}\right]\right)-6 c d \text{Sinh}\left[\frac{a+b x}{c+d x}\right]-$$
$$6 d^2 x \text{Sinh}\left[\frac{a+b x}{c+d x}\right]+2 c d \text{Sinh}\left[\frac{3 (a+b x)}{c+d x}\right]+2 d^2 x \text{Sinh}\left[\frac{3 (a+b x)}{c+d x}\right]-$$
$$3 b c \text{Cosh}\left[\frac{b}{d}\right] \text{SinhIntegral}\left[\frac{-b c+a d}{d (c+d x)}\right]+3 a d \text{Cosh}\left[\frac{b}{d}\right] \text{SinhIntegral}\left[\frac{-b c+a d}{d (c+d x)}\right]-$$
$$3 b c \text{Sinh}\left[\frac{b}{d}\right] \text{SinhIntegral}\left[\frac{-b c+a d}{d (c+d x)}\right]+3 a d \text{Sinh}\left[\frac{b}{d}\right] \text{SinhIntegral}\left[\frac{-b c+a d}{d (c+d x)}\right]+$$
$$6 b c \text{Sinh}\left[\frac{3 b}{d}\right] \text{SinhIntegral}\left[\frac{3 (-b c+a d)}{d (c+d x)}\right]-6 a d \text{Sinh}\left[\frac{3 b}{d}\right] \text{SinhIntegral}\left[\frac{3 (-b c+a d)}{d (c+d x)}\right]-$$
$$3 b c \text{Cosh}\left[\frac{b}{d}\right] \text{SinhIntegral}\left[\frac{b c-a d}{c d+d^2 x}\right]+3 a d \text{Cosh}\left[\frac{b}{d}\right] \text{SinhIntegral}\left[\frac{b c-a d}{c d+d^2 x}\right]+$$
$$\left.3 b c \text{Sinh}\left[\frac{b}{d}\right] \text{SinhIntegral}\left[\frac{b c-a d}{c d+d^2 x}\right]-3 a d \text{Sinh}\left[\frac{b}{d}\right] \text{SinhIntegral}\left[\frac{b c-a d}{c d+d^2 x}\right]\right)$$

Problem 298: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 121 leaves, 6 steps):

$$\frac{(b c-a d) f \text{Cosh}\left[e+\frac{b f}{d}\right] \text{CoshIntegral}\left[\frac{(b c-a d) f}{d (c+d x)}\right]}{d^2}+$$
$$\frac{(c+d x) \text{Sinh}\left[\frac{c e+a f+d e x+b f x}{c+d x}\right]}{d}-\frac{(b c-a d) f \text{Sinh}\left[e+\frac{b f}{d}\right] \text{SinhIntegral}\left[\frac{(b c-a d) f}{d (c+d x)}\right]}{d^2}$$

Result (type 4, 449 leaves):

$$\frac{1}{2 d^2}\left((b c-a d) f \text{CoshIntegral}\left[\frac{(b c-a d) f}{d (c+d x)}\right] \left(\text{Cosh}\left[e+\frac{b f}{d}\right]-\text{Sinh}\left[e+\frac{b f}{d}\right]\right)+\right.$$
$$(b c-a d) f \text{CoshIntegral}\left[\frac{-b c f+a d f}{d (c+d x)}\right] \left(\text{Cosh}\left[e+\frac{b f}{d}\right]+\text{Sinh}\left[e+\frac{b f}{d}\right]\right)+$$
$$2 c d \text{Sinh}\left[\frac{c e+a f+d e x+b f x}{c+d x}\right]+2 d^2 x \text{Sinh}\left[\frac{c e+a f+d e x+b f x}{c+d x}\right]+$$
$$b c f \text{Cosh}\left[e+\frac{b f}{d}\right] \text{SinhIntegral}\left[\frac{(b c-a d) f}{d (c+d x)}\right]-$$
$$a d f \text{Cosh}\left[e+\frac{b f}{d}\right] \text{SinhIntegral}\left[\frac{(b c-a d) f}{d (c+d x)}\right]-$$
$$b c f \text{Sinh}\left[e+\frac{b f}{d}\right] \text{SinhIntegral}\left[\frac{(b c-a d) f}{d (c+d x)}\right]+a d f \text{Sinh}\left[e+\frac{b f}{d}\right]$$
$$\text{SinhIntegral}\left[\frac{(b c-a d) f}{d (c+d x)}\right]+b c f \text{Cosh}\left[e+\frac{b f}{d}\right] \text{SinhIntegral}\left[\frac{-b c f+a d f}{d (c+d x)}\right]-$$
$$a d f \text{Cosh}\left[e+\frac{b f}{d}\right] \text{SinhIntegral}\left[\frac{-b c f+a d f}{d (c+d x)}\right]+b c f \text{Sinh}\left[e+\frac{b f}{d}\right]$$
$$\left.\text{SinhIntegral}\left[\frac{-b c f+a d f}{d (c+d x)}\right]-a d f \text{Sinh}\left[e+\frac{b f}{d}\right] \text{SinhIntegral}\left[\frac{-b c f+a d f}{d (c+d x)}\right]\right)$$

Problem 300: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 226 leaves, 10 steps):

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

Result (type 4, 671 leaves):

$$\frac{1}{8 d^2}\left(6 b c f \operatorname{Cosh}\left[3\left(e+\frac{b f}{d}\right)\right] \operatorname{CoshIntegral}\left[\frac{3(-b c f+a d f)}{d(c+d x)}\right]-\right.$$
$$6 a d f \operatorname{Cosh}\left[3\left(e+\frac{b f}{d}\right)\right] \operatorname{CoshIntegral}\left[\frac{3(-b c f+a d f)}{d(c+d x)}\right]+$$
$$3(b c-a d) f \operatorname{CoshIntegral}\left[\frac{(b c-a d) f}{d(c+d x)}\right]\left(-\operatorname{Cosh}\left[e+\frac{b f}{d}\right]+\operatorname{Sinh}\left[e+\frac{b f}{d}\right]\right)-$$
$$3(b c-a d) f \operatorname{CoshIntegral}\left[\frac{-b c f+a d f}{d(c+d x)}\right]\left(\operatorname{Cosh}\left[e+\frac{b f}{d}\right]+\operatorname{Sinh}\left[e+\frac{b f}{d}\right]\right)-$$
$$6 c d \operatorname{Sinh}\left[\frac{c e+a f+d e x+b f x}{c+d x}\right]-6 d^2 x \operatorname{Sinh}\left[\frac{c e+a f+d e x+b f x}{c+d x}\right]+$$
$$2 c d \operatorname{Sinh}\left[\frac{3(c e+a f+d e x+b f x)}{c+d x}\right]+2 d^2 x \operatorname{Sinh}\left[\frac{3(c e+a f+d e x+b f x)}{c+d x}\right]-$$
$$3 b c f \operatorname{Cosh}\left[e+\frac{b f}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b c-a d) f}{d(c+d x)}\right]+$$
$$3 a d f \operatorname{Cosh}\left[e+\frac{b f}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b c-a d) f}{d(c+d x)}\right]+$$
$$3 b c f \operatorname{Sinh}\left[e+\frac{b f}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b c-a d) f}{d(c+d x)}\right]-3 a d f \operatorname{Sinh}\left[e+\frac{b f}{d}\right]$$
$$\operatorname{SinhIntegral}\left[\frac{(b c-a d) f}{d(c+d x)}\right]-3 b c f \operatorname{Cosh}\left[e+\frac{b f}{d}\right] \operatorname{SinhIntegral}\left[\frac{-b c f+a d f}{d(c+d x)}\right]+$$
$$3 a d f \operatorname{Cosh}\left[e+\frac{b f}{d}\right] \operatorname{SinhIntegral}\left[\frac{-b c f+a d f}{d(c+d x)}\right]-3 b c f \operatorname{Sinh}\left[e+\frac{b f}{d}\right]$$
$$\operatorname{SinhIntegral}\left[\frac{-b c f+a d f}{d(c+d x)}\right]+3 a d f \operatorname{Sinh}\left[e+\frac{b f}{d}\right] \operatorname{SinhIntegral}\left[\frac{-b c f+a d f}{d(c+d x)}\right]+$$
$$6 b c f \operatorname{Sinh}\left[3\left(e+\frac{b f}{d}\right)\right] \operatorname{SinhIntegral}\left[\frac{3(-b c f+a d f)}{d(c+d x)}\right]-$$
$$\left.6 a d f \operatorname{Sinh}\left[3\left(e+\frac{b f}{d}\right)\right] \operatorname{SinhIntegral}\left[\frac{3(-b c f+a d f)}{d(c+d x)}\right]\right)$$

Problem 312: Result more than twice size of optimal antiderivative.

$$\int e^x \operatorname{Csch}[2 x] \, dx$$

Optimal (type 3, 11 leaves, 5 steps):

$$\operatorname{ArcTan}\left[e^x\right]-\operatorname{ArcTanh}\left[e^x\right]$$

Result (type 3, 27 leaves):

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

Problem 320: Result is not expressed in closed-form.

$$\int e^x \,\text{Csch}[4 x]\, dx$$

Optimal (type 3, 113 leaves, 15 steps):

$$-\frac{1}{2}\text{ArcTan}\left[e^x\right]-\frac{\text{ArcTan}\left[1-\sqrt{2}\, e^x\right]}{2\sqrt{2}}+\frac{\text{ArcTan}\left[1+\sqrt{2}\, e^x\right]}{2\sqrt{2}}-\frac{\text{ArcTanh}\left[e^x\right]}{2}-\frac{\text{Log}\left[1-\sqrt{2}\, e^x+e^{2x}\right]}{4\sqrt{2}}+\frac{\text{Log}\left[1+\sqrt{2}\, e^x+e^{2x}\right]}{4\sqrt{2}}$$

Result (type 7, 56 leaves):

$$\frac{1}{4}\left(-2\,\text{ArcTan}\left[e^x\right]+\text{Log}\left[1-e^x\right]-\text{Log}\left[1+e^x\right]-\text{RootSum}\left[1+\#1^4\,\&,\ \frac{x-\text{Log}\left[e^x-\#1\right]}{\#1^3}\,\&\right]\right)$$

Problem 321: Result is not expressed in closed-form.

$$\int e^x \,\text{Csch}[4 x]^2\, dx$$

Optimal (type 3, 131 leaves, 16 steps):

$$\frac{e^x}{2\left(1-e^{8x}\right)}-\frac{\text{ArcTan}\left[e^x\right]}{8}+\frac{\text{ArcTan}\left[1-\sqrt{2}\, e^x\right]}{8\sqrt{2}}-\frac{\text{ArcTan}\left[1+\sqrt{2}\, e^x\right]}{8\sqrt{2}}-\frac{\text{ArcTanh}\left[e^x\right]}{8}+\frac{\text{Log}\left[1-\sqrt{2}\, e^x+e^{2x}\right]}{16\sqrt{2}}-\frac{\text{Log}\left[1+\sqrt{2}\, e^x+e^{2x}\right]}{16\sqrt{2}}$$

Result (type 7, 68 leaves):

$$\frac{1}{16}\left(-\frac{8\, e^x}{-1+e^{8x}}-2\,\text{ArcTan}\left[e^x\right]+\text{Log}\left[1-e^x\right]-\text{Log}\left[1+e^x\right]+\text{RootSum}\left[1+\#1^4\,\&,\ \frac{x-\text{Log}\left[e^x-\#1\right]}{\#1^3}\,\&\right]\right)$$

Problem 327: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 122 leaves, 2 steps):

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

Result (type 5, 416 leaves):

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

$$\left(F^{c (a+b x)}\,\left(e^2-b^2 c^2\,\text{Log}[F]^2\right)\,\left(1+\text{Hypergeometric2F1}\left[1,\frac{b c\,\text{Log}[F]}{e},1+\frac{b c\,\text{Log}[F]}{e},\text{Cosh}[d+e x]+\text{Sinh}[d+e x]\right]\,\left(-1+\text{Cosh}[d]+\text{Sinh}[d]\right)\right)\right)\Big/$$

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

$$\left.\left(1-\text{Hypergeometric2F1}\left[1,\frac{b c\,\text{Log}[F]}{e},1+\frac{b c\,\text{Log}[F]}{e},-\text{Cosh}[d+e x]-\text{Sinh}[d+e x]\right]\,\left(1+\text{Cosh}[d]+\text{Sinh}[d]\right)\right)\right)\Big/\left(2 b c e^2\,\text{Log}[F]\,\left(1+\text{Cosh}[d]+\text{Sinh}[d]\right)\right)+$$

$$\frac{b c F^{a c+b c x}\,\text{Csch}\left[\frac{d}{2}\right]\,\text{Csch}\left[\frac{d}{2}+\frac{e x}{2}\right]\,\text{Log}[F]\,\text{Sinh}\left[\frac{e x}{2}\right]}{4 e^2}+\frac{b c F^{a c+b c x}\,\text{Log}[F]\,\text{Sech}\left[\frac{d}{2}\right]\,\text{Sech}\left[\frac{d}{2}+\frac{e x}{2}\right]\,\text{Sinh}\left[\frac{e x}{2}\right]}{4 e^2}$$

Problem 356: Result more than twice size of optimal antiderivative.

$$\int f^{a+c x^2}\,\text{Sinh}\left[d+e x+f x^2\right]^3\,dx$$

Optimal (type 4, 300 leaves, 14 steps):

$$\frac{3 e^{-d+\frac{e^2}{4 f-4 c\,\text{Log}[f]}}\,f^a\,\sqrt{\pi}\,\text{Erf}\left[\frac{e+2 x (f-c\,\text{Log}[f])}{2\sqrt{f-c\,\text{Log}[f]}}\right]}{16\sqrt{f-c\,\text{Log}[f]}}-\frac{e^{-3 d+\frac{9 e^2}{12 f-4 c\,\text{Log}[f]}}\,f^a\,\sqrt{\pi}\,\text{Erf}\left[\frac{3 e+2 x (3 f-c\,\text{Log}[f])}{2\sqrt{3 f-c\,\text{Log}[f]}}\right]}{16\sqrt{3 f-c\,\text{Log}[f]}}-$$

$$\frac{3 e^{d-\frac{e^2}{4 (f+c\,\text{Log}[f])}}\,f^a\,\sqrt{\pi}\,\text{Erfi}\left[\frac{e+2 x (f+c\,\text{Log}[f])}{2\sqrt{f+c\,\text{Log}[f]}}\right]}{16\sqrt{f+c\,\text{Log}[f]}}+\frac{e^{3 d-\frac{9 e^2}{4 (3 f+c\,\text{Log}[f])}}\,f^a\,\sqrt{\pi}\,\text{Erfi}\left[\frac{3 e+2 x (3 f+c\,\text{Log}[f])}{2\sqrt{3 f+c\,\text{Log}[f]}}\right]}{16\sqrt{3 f+c\,\text{Log}[f]}}$$

Result (type 4, 2303 leaves):

$$\frac{1}{16\,(f-c\,\text{Log}[f])\,(3 f-c\,\text{Log}[f])\,(f+c\,\text{Log}[f])\,(3 f+c\,\text{Log}[f])}$$

$$f^a\,\sqrt{\pi}\,\left(27\,e^{\frac{e^2}{4 (f-c\,\text{Log}[f])}}\,f^3\,\text{Cosh}[d]\,\text{Erf}\left[\frac{e+2 f x-2 c x\,\text{Log}[f]}{2\sqrt{f-c\,\text{Log}[f]}}\right]\,\sqrt{f-c\,\text{Log}[f]}\,+\right.$$

$$27 c\,e^{\frac{e^2}{4 (f-c\,\text{Log}[f])}}\,f^2\,\text{Cosh}[d]\,\text{Erf}\left[\frac{e+2 f x-2 c x\,\text{Log}[f]}{2\sqrt{f-c\,\text{Log}[f]}}\right]\,\text{Log}[f]\,\sqrt{f-c\,\text{Log}[f]}\,-$$

$$3 c^2\,e^{\frac{e^2}{4 (f-c\,\text{Log}[f])}}\,f\,\text{Cosh}[d]\,\text{Erf}\left[\frac{e+2 f x-2 c x\,\text{Log}[f]}{2\sqrt{f-c\,\text{Log}[f]}}\right]\,\text{Log}[f]^2\,\sqrt{f-c\,\text{Log}[f]}\,-$$

$$3\,c^3\,e^{\frac{e^2}{4\,(f-c\,\text{Log}[f])}}\,\text{Cosh}[d]\,\text{Erf}\Big[\frac{e+2\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{f-c\,\text{Log}[f]}\,-$$

$$3\,e^{\frac{9\,e^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f^3\,\text{Cosh}[3\,d]\,\text{Erf}\Big[\frac{3\,e+6\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]\,\sqrt{3\,f-c\,\text{Log}[f]}\,-$$

$$c\,e^{\frac{9\,e^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f^2\,\text{Cosh}[3\,d]\,\text{Erf}\Big[\frac{3\,e+6\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{3\,f-c\,\text{Log}[f]}\,+$$

$$3\,c^2\,e^{\frac{9\,e^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f\,\text{Cosh}[3\,d]\,\text{Erf}\Big[\frac{3\,e+6\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{3\,f-c\,\text{Log}[f]}\,+$$

$$c^3\,e^{\frac{9\,e^2}{4\,(3\,f-c\,\text{Log}[f])}}\,\text{Cosh}[3\,d]\,\text{Erf}\Big[\frac{3\,e+6\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{3\,f-c\,\text{Log}[f]}\,-$$

$$27\,e^{-\frac{e^2}{4\,(f+c\,\text{Log}[f])}}\,f^3\,\text{Cosh}[d]\,\text{Erfi}\Big[\frac{e+2\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\sqrt{f+c\,\text{Log}[f]}\,+$$

$$27\,c\,e^{-\frac{e^2}{4\,(f+c\,\text{Log}[f])}}\,f^2\,\text{Cosh}[d]\,\text{Erfi}\Big[\frac{e+2\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{f+c\,\text{Log}[f]}\,+$$

$$3\,c^2\,e^{-\frac{e^2}{4\,(f+c\,\text{Log}[f])}}\,f\,\text{Cosh}[d]\,\text{Erfi}\Big[\frac{e+2\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{f+c\,\text{Log}[f]}\,-$$

$$3\,c^3\,e^{-\frac{e^2}{4\,(f+c\,\text{Log}[f])}}\,\text{Cosh}[d]\,\text{Erfi}\Big[\frac{e+2\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{f+c\,\text{Log}[f]}\,+$$

$$3\,e^{-\frac{9\,e^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f^3\,\text{Cosh}[3\,d]\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\sqrt{3\,f+c\,\text{Log}[f]}\,-$$

$$c\,e^{-\frac{9\,e^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f^2\,\text{Cosh}[3\,d]\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{3\,f+c\,\text{Log}[f]}\,-$$

$$3\,c^2\,e^{-\frac{9\,e^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f\,\text{Cosh}[3\,d]\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{3\,f+c\,\text{Log}[f]}\,+$$

$$c^3\,e^{-\frac{9\,e^2}{4\,(3\,f+c\,\text{Log}[f])}}\,\text{Cosh}[3\,d]\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{3\,f+c\,\text{Log}[f]}\,-$$

$$27\,e^{\frac{e^2}{4\,(f-c\,\text{Log}[f])}}\,f^3\,\text{Erf}\Big[\frac{e+2\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\Big]\,\sqrt{f-c\,\text{Log}[f]}\,\text{Sinh}[d]\,-$$

$$27\,c\,e^{\frac{e^2}{4\,(f-c\,\text{Log}[f])}}\,f^2\,\text{Erf}\Big[\frac{e+2\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{f-c\,\text{Log}[f]}\,\text{Sinh}[d]\,+$$

$$3\,c^2\,e^{\frac{e^2}{4\,(f-c\,\text{Log}[f])}}\,f\,\text{Erf}\Big[\frac{e+2\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{f-c\,\text{Log}[f]}\,\text{Sinh}[d]\,+$$

$$3\,c^3\,e^{\frac{e^2}{4\,(f-c\,\text{Log}[f])}}\,\text{Erf}\Big[\frac{e+2\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{f-c\,\text{Log}[f]}\,\text{Sinh}[d]\,-$$

$$27\,e^{-\frac{e^2}{4\,(f+c\,\text{Log}[f])}}\,f^3\,\text{Erfi}\Big[\frac{e+2\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\sqrt{f+c\,\text{Log}[f]}\,\text{Sinh}[d]\,+$$

$$27\,c\,e^{-\frac{e^2}{4\,(f+c\,\text{Log}[f])}}\,f^2\,\text{Erfi}\Big[\frac{e+2\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{f+c\,\text{Log}[f]}\,\text{Sinh}[d]+$$

$$3\,c^2\,e^{-\frac{e^2}{4\,(f+c\,\text{Log}[f])}}\,f\,\text{Erfi}\Big[\frac{e+2\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{f+c\,\text{Log}[f]}\,\text{Sinh}[d]-$$

$$3\,c^3\,e^{-\frac{e^2}{4\,(f+c\,\text{Log}[f])}}\,\text{Erfi}\Big[\frac{e+2\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{f+c\,\text{Log}[f]}\,\text{Sinh}[d]+$$

$$3\,e^{\frac{9\,e^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f^3\,\text{Erf}\Big[\frac{3\,e+6\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]\,\sqrt{3\,f-c\,\text{Log}[f]}\,\text{Sinh}[3\,d]+$$

$$c\,e^{\frac{9\,e^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f^2\,\text{Erf}\Big[\frac{3\,e+6\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{3\,f-c\,\text{Log}[f]}\,\text{Sinh}[3\,d]-$$

$$3\,c^2\,e^{\frac{9\,e^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f\,\text{Erf}\Big[\frac{3\,e+6\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{3\,f-c\,\text{Log}[f]}\,\text{Sinh}[3\,d]-$$

$$c^3\,e^{\frac{9\,e^2}{4\,(3\,f-c\,\text{Log}[f])}}\,\text{Erf}\Big[\frac{3\,e+6\,f\,x-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{3\,f-c\,\text{Log}[f]}\,\text{Sinh}[3\,d]+$$

$$3\,e^{-\frac{9\,e^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f^3\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\sqrt{3\,f+c\,\text{Log}[f]}\,\text{Sinh}[3\,d]-$$

$$c\,e^{-\frac{9\,e^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f^2\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{3\,f+c\,\text{Log}[f]}\,\text{Sinh}[3\,d]-$$

$$3\,c^2\,e^{-\frac{9\,e^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{3\,f+c\,\text{Log}[f]}\,\text{Sinh}[3\,d]+$$

$$c^3\,e^{-\frac{9\,e^2}{4\,(3\,f+c\,\text{Log}[f])}}\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{3\,f+c\,\text{Log}[f]}\,\text{Sinh}[3\,d]\Bigg)$$

Problem 362: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 323 leaves, 14 steps):

$$-\frac{3\,e^{-d+\frac{b^2\,\text{Log}[f]^2}{4\,f-4\,c\,\text{Log}[f]}}\,f^a\,\sqrt{\pi}\,\text{Erf}\Big[\frac{b\,\text{Log}[f]-2\,x\,(f-c\,\text{Log}[f])}{2\,\sqrt{f-c\,\text{Log}[f]}}\Big]}{16\,\sqrt{f-c\,\text{Log}[f]}}+\frac{e^{-3\,d+\frac{b^2\,\text{Log}[f]^2}{12\,f-4\,c\,\text{Log}[f]}}\,f^a\,\sqrt{\pi}\,\text{Erf}\Big[\frac{b\,\text{Log}[f]-2\,x\,(3\,f-c\,\text{Log}[f])}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]}{16\,\sqrt{3\,f-c\,\text{Log}[f]}}-$$

$$\frac{3\,e^{d-\frac{b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,f^a\,\sqrt{\pi}\,\text{Erfi}\Big[\frac{b\,\text{Log}[f]+2\,x\,(f+c\,\text{Log}[f])}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]}{16\,\sqrt{f+c\,\text{Log}[f]}}+\frac{e^{3\,d-\frac{b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f^a\,\sqrt{\pi}\,\text{Erfi}\Big[\frac{b\,\text{Log}[f]+2\,x\,(3\,f+c\,\text{Log}[f])}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]}{16\,\sqrt{3\,f+c\,\text{Log}[f]}}$$

Result (type 4, 2511 leaves):

$$\frac{1}{16\,(f-c\,\text{Log}[f])\,(3\,f-c\,\text{Log}[f])\,(f+c\,\text{Log}[f])\,(3\,f+c\,\text{Log}[f])}$$

$$
\begin{aligned}
& f^{a}\sqrt{\pi}\left(27\,e^{\frac{b^2\,\text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\,f^3\,\text{Cosh}[d]\,\text{Erf}\left[\frac{2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\right]\sqrt{f-c\,\text{Log}[f]}\,+\right.\\
& 27\,c\,e^{\frac{b^2\,\text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\,f^2\,\text{Cosh}[d]\,\text{Erf}\left[\frac{2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{f-c\,\text{Log}[f]}\,-\\
& 3\,c^2\,e^{\frac{b^2\,\text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\,f\,\text{Cosh}[d]\,\text{Erf}\left[\frac{2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\right]\text{Log}[f]^2\,\sqrt{f-c\,\text{Log}[f]}\,-\\
& 3\,c^3\,e^{\frac{b^2\,\text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\,\text{Cosh}[d]\,\text{Erf}\left[\frac{2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\right]\text{Log}[f]^3\,\sqrt{f-c\,\text{Log}[f]}\,-\\
& 3\,e^{\frac{b^2\,\text{Log}[f]^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f^3\,\text{Cosh}[3\,d]\,\text{Erf}\left[\frac{6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\right]\sqrt{3\,f-c\,\text{Log}[f]}\,-\\
& c\,e^{\frac{b^2\,\text{Log}[f]^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f^2\,\text{Cosh}[3\,d]\,\text{Erf}\left[\frac{6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{3\,f-c\,\text{Log}[f]}\,+\\
& 3\,c^2\,e^{\frac{b^2\,\text{Log}[f]^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f\,\text{Cosh}[3\,d]\,\text{Erf}\left[\frac{6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\right]\text{Log}[f]^2\,\sqrt{3\,f-c\,\text{Log}[f]}\,+\\
& c^3\,e^{\frac{b^2\,\text{Log}[f]^2}{4\,(3\,f-c\,\text{Log}[f])}}\,\text{Cosh}[3\,d]\,\text{Erf}\left[\frac{6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\right]\text{Log}[f]^3\,\sqrt{3\,f-c\,\text{Log}[f]}\,-\\
& 27\,e^{-\frac{b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,f^3\,\text{Cosh}[d]\,\text{Erfi}\left[\frac{2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\right]\sqrt{f+c\,\text{Log}[f]}\,+\\
& 27\,c\,e^{-\frac{b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,f^2\,\text{Cosh}[d]\,\text{Erfi}\left[\frac{2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{f+c\,\text{Log}[f]}\,+\\
& 3\,c^2\,e^{-\frac{b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,f\,\text{Cosh}[d]\,\text{Erfi}\left[\frac{2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\right]\text{Log}[f]^2\,\sqrt{f+c\,\text{Log}[f]}\,-\\
& 3\,c^3\,e^{-\frac{b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,\text{Cosh}[d]\,\text{Erfi}\left[\frac{2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\right]\text{Log}[f]^3\,\sqrt{f+c\,\text{Log}[f]}\,+\\
& 3\,e^{-\frac{b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f^3\,\text{Cosh}[3\,d]\,\text{Erfi}\left[\frac{6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\right]\sqrt{3\,f+c\,\text{Log}[f]}\,-\\
& c\,e^{-\frac{b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f^2\,\text{Cosh}[3\,d]\,\text{Erfi}\left[\frac{6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{3\,f+c\,\text{Log}[f]}\,-\\
& 3\,c^2\,e^{-\frac{b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f\,\text{Cosh}[3\,d]\,\text{Erfi}\left[\frac{6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\right]\text{Log}[f]^2\,\sqrt{3\,f+c\,\text{Log}[f]}\,+\\
& c^3\,e^{-\frac{b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}\,\text{Cosh}[3\,d]\,\text{Erfi}\left[\frac{6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\right]\text{Log}[f]^3\,\sqrt{3\,f+c\,\text{Log}[f]}\,-\\
& 27\,e^{\frac{b^2\,\text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\,f^3\,\text{Erf}\left[\frac{2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\right]\sqrt{f-c\,\text{Log}[f]}\,\text{Sinh}[d]\,-\\
& 27\,c\,e^{\frac{b^2\,\text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\,f^2\,\text{Erf}\left[\frac{2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{f-c\,\text{Log}[f]}\,\text{Sinh}[d]\,+
\end{aligned}
$$

$$3\, c^2\, e^{\frac{b^2 \text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\, f\, \text{Erf}\left[\frac{2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\right]\text{Log}[f]^2\,\sqrt{f-c\,\text{Log}[f]}\;\text{Sinh}[d]+$$

$$3\, c^3\, e^{\frac{b^2 \text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\, \text{Erf}\left[\frac{2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\right]\text{Log}[f]^3\,\sqrt{f-c\,\text{Log}[f]}\;\text{Sinh}[d]-$$

$$27\, e^{-\frac{b^2 \text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\, f^3\, \text{Erfi}\left[\frac{2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\right]\sqrt{f+c\,\text{Log}[f]}\;\text{Sinh}[d]+$$

$$27\, c\, e^{-\frac{b^2 \text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\, f^2\, \text{Erfi}\left[\frac{2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{f+c\,\text{Log}[f]}\;\text{Sinh}[d]+$$

$$3\, c^2\, e^{-\frac{b^2 \text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\, f\, \text{Erfi}\left[\frac{2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\right]\text{Log}[f]^2\,\sqrt{f+c\,\text{Log}[f]}\;\text{Sinh}[d]-$$

$$3\, c^3\, e^{-\frac{b^2 \text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\, \text{Erfi}\left[\frac{2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\right]\text{Log}[f]^3\,\sqrt{f+c\,\text{Log}[f]}\;\text{Sinh}[d]+$$

$$3\, e^{\frac{b^2 \text{Log}[f]^2}{4\,(3f-c\,\text{Log}[f])}}\, f^3\, \text{Erf}\left[\frac{6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\right]\sqrt{3\,f-c\,\text{Log}[f]}\;\text{Sinh}[3\,d]+$$

$$c\, e^{\frac{b^2 \text{Log}[f]^2}{4\,(3f-c\,\text{Log}[f])}}\, f^2\, \text{Erf}\left[\frac{6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{3\,f-c\,\text{Log}[f]}\;\text{Sinh}[3\,d]-$$

$$3\, c^2\, e^{\frac{b^2 \text{Log}[f]^2}{4\,(3f-c\,\text{Log}[f])}}\, f\, \text{Erf}\left[\frac{6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\right]\text{Log}[f]^2\,\sqrt{3\,f-c\,\text{Log}[f]}\;\text{Sinh}[3\,d]-$$

$$c^3\, e^{\frac{b^2 \text{Log}[f]^2}{4\,(3f-c\,\text{Log}[f])}}\, \text{Erf}\left[\frac{6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\right]\text{Log}[f]^3\,\sqrt{3\,f-c\,\text{Log}[f]}\;\text{Sinh}[3\,d]+$$

$$3\, e^{-\frac{b^2 \text{Log}[f]^2}{4\,(3f+c\,\text{Log}[f])}}\, f^3\, \text{Erfi}\left[\frac{6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\right]\sqrt{3\,f+c\,\text{Log}[f]}\;\text{Sinh}[3\,d]-$$

$$c\, e^{-\frac{b^2 \text{Log}[f]^2}{4\,(3f+c\,\text{Log}[f])}}\, f^2\, \text{Erfi}\left[\frac{6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{3\,f+c\,\text{Log}[f]}\;\text{Sinh}[3\,d]-$$

$$3\, c^2\, e^{-\frac{b^2 \text{Log}[f]^2}{4\,(3f+c\,\text{Log}[f])}}\, f\, \text{Erfi}\left[\frac{6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\right]\text{Log}[f]^2\,\sqrt{3\,f+c\,\text{Log}[f]}\;\text{Sinh}[3\,d]+$$

$$c^3\, e^{-\frac{b^2 \text{Log}[f]^2}{4\,(3f+c\,\text{Log}[f])}}\, \text{Erfi}\left[\frac{6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\right]\text{Log}[f]^3\,\sqrt{3\,f+c\,\text{Log}[f]}\;\text{Sinh}[3\,d]\Bigg)$$

Problem 364: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 239 leaves, 10 steps):

$$-\frac{f^{a-\frac{b^2}{4c}}\sqrt{\pi}\,\text{Erfi}\left[\frac{(b+2cx)\sqrt{\text{Log}[f]}}{2\sqrt{c}}\right]}{4\sqrt{c}\,\sqrt{\text{Log}[f]}}+\frac{e^{-2d+\frac{(2e-b\,\text{Log}[f])^2}{8f-4c\,\text{Log}[f]}}f^a\sqrt{\pi}\,\text{Erf}\left[\frac{2e-b\,\text{Log}[f]+2x\,(2f-c\,\text{Log}[f])}{2\sqrt{2f-c\,\text{Log}[f]}}\right]}{8\sqrt{2f-c\,\text{Log}[f]}}+\frac{e^{2d-\frac{(2e+b\,\text{Log}[f])^2}{8f+4c\,\text{Log}[f]}}f^a\sqrt{\pi}\,\text{Erfi}\left[\frac{2e+b\,\text{Log}[f]+2x\,(2f+c\,\text{Log}[f])}{2\sqrt{2f+c\,\text{Log}[f]}}\right]}{8\sqrt{2f+c\,\text{Log}[f]}}$$

Result (type 4, 912 leaves):

$$\frac{1}{8c\,\text{Log}[f]\,(2f-c\,\text{Log}[f])\,(2f+c\,\text{Log}[f])}f^a\sqrt{\pi}\left(-8\sqrt{c}\,f^{2-\frac{b^2}{4c}}\,\text{Erfi}\left[\frac{(b+2cx)\sqrt{\text{Log}[f]}}{2\sqrt{c}}\right]\sqrt{\text{Log}[f]}+\right.$$

$$2c^{5/2}f^{-\frac{b^2}{4c}}\,\text{Erfi}\left[\frac{(b+2cx)\sqrt{\text{Log}[f]}}{2\sqrt{c}}\right]\text{Log}[f]^{5/2}+2c\,e^{-\frac{-4e^2+4be\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4(2f-c\,\text{Log}[f])}}f\,\text{Cosh}[2d]$$

$$\text{Erf}\left[\frac{2e+4fx-b\,\text{Log}[f]-2cx\,\text{Log}[f]}{2\sqrt{2f-c\,\text{Log}[f]}}\right]\text{Log}[f]\sqrt{2f-c\,\text{Log}[f]}+c^2\,e^{-\frac{-4e^2+4be\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4(2f-c\,\text{Log}[f])}}$$

$$\text{Cosh}[2d]\,\text{Erf}\left[\frac{2e+4fx-b\,\text{Log}[f]-2cx\,\text{Log}[f]}{2\sqrt{2f-c\,\text{Log}[f]}}\right]\text{Log}[f]^2\sqrt{2f-c\,\text{Log}[f]}+$$

$$2c\,e^{-\frac{4e^2+4be\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4(2f+c\,\text{Log}[f])}}f\,\text{Cosh}[2d]\,\text{Erfi}\left[\frac{2e+4fx+b\,\text{Log}[f]+2cx\,\text{Log}[f]}{2\sqrt{2f+c\,\text{Log}[f]}}\right]$$

$$\text{Log}[f]\sqrt{2f+c\,\text{Log}[f]}-c^2\,e^{-\frac{4e^2+4be\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4(2f+c\,\text{Log}[f])}}\,\text{Cosh}[2d]$$

$$\text{Erfi}\left[\frac{2e+4fx+b\,\text{Log}[f]+2cx\,\text{Log}[f]}{2\sqrt{2f+c\,\text{Log}[f]}}\right]\text{Log}[f]^2\sqrt{2f+c\,\text{Log}[f]}-2c\,e^{-\frac{-4e^2+4be\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4(2f-c\,\text{Log}[f])}}$$

$$f\,\text{Erf}\left[\frac{2e+4fx-b\,\text{Log}[f]-2cx\,\text{Log}[f]}{2\sqrt{2f-c\,\text{Log}[f]}}\right]\text{Log}[f]\sqrt{2f-c\,\text{Log}[f]}\,\text{Sinh}[2d]-$$

$$c^2\,e^{-\frac{-4e^2+4be\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4(2f-c\,\text{Log}[f])}}\,\text{Erf}\left[\frac{2e+4fx-b\,\text{Log}[f]-2cx\,\text{Log}[f]}{2\sqrt{2f-c\,\text{Log}[f]}}\right]\text{Log}[f]^2\sqrt{2f-c\,\text{Log}[f]}$$

$$\text{Sinh}[2d]+2c\,e^{-\frac{4e^2+4be\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4(2f+c\,\text{Log}[f])}}f\,\text{Erfi}\left[\frac{2e+4fx+b\,\text{Log}[f]+2cx\,\text{Log}[f]}{2\sqrt{2f+c\,\text{Log}[f]}}\right]$$

$$\text{Log}[f]\sqrt{2f+c\,\text{Log}[f]}\,\text{Sinh}[2d]-c^2\,e^{-\frac{4e^2+4be\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4(2f+c\,\text{Log}[f])}}$$

$$\left.\text{Erfi}\left[\frac{2e+4fx+b\,\text{Log}[f]+2cx\,\text{Log}[f]}{2\sqrt{2f+c\,\text{Log}[f]}}\right]\text{Log}[f]^2\sqrt{2f+c\,\text{Log}[f]}\,\text{Sinh}[2d]\right)$$

Problem 365: Result more than twice size of optimal antiderivative.

$$\int f^{a+bx+cx^2}\,\text{Sinh}\left[d+ex+fx^2\right]^3\,dx$$

Optimal (type 4, 344 leaves, 14 steps):

$$\frac{3\,e^{-d+\frac{(e-b\,\mathrm{Log}[f])^2}{4\,(f-c\,\mathrm{Log}[f])}}\,f^a\,\sqrt{\pi}\,\mathrm{Erf}\left[\frac{e-b\,\mathrm{Log}[f]+2\,x\,(f-c\,\mathrm{Log}[f])}{2\,\sqrt{f-c\,\mathrm{Log}[f]}}\right]}{16\,\sqrt{f-c\,\mathrm{Log}[f]}}-\frac{e^{-3\,d+\frac{(3\,e-b\,\mathrm{Log}[f])^2}{12\,f-4\,c\,\mathrm{Log}[f]}}\,f^a\,\sqrt{\pi}\,\mathrm{Erf}\left[\frac{3\,e-b\,\mathrm{Log}[f]+2\,x\,(3\,f-c\,\mathrm{Log}[f])}{2\,\sqrt{3\,f-c\,\mathrm{Log}[f]}}\right]}{16\,\sqrt{3\,f-c\,\mathrm{Log}[f]}}-\frac{3\,e^{d-\frac{(e+b\,\mathrm{Log}[f])^2}{4\,(f+c\,\mathrm{Log}[f])}}\,f^a\,\sqrt{\pi}\,\mathrm{Erfi}\left[\frac{e+b\,\mathrm{Log}[f]+2\,x\,(f+c\,\mathrm{Log}[f])}{2\,\sqrt{f+c\,\mathrm{Log}[f]}}\right]}{16\,\sqrt{f+c\,\mathrm{Log}[f]}}+\frac{e^{3\,d-\frac{(3\,e+b\,\mathrm{Log}[f])^2}{4\,(3\,f+c\,\mathrm{Log}[f])}}\,f^a\,\sqrt{\pi}\,\mathrm{Erfi}\left[\frac{3\,e+b\,\mathrm{Log}[f]+2\,x\,(3\,f+c\,\mathrm{Log}[f])}{2\,\sqrt{3\,f+c\,\mathrm{Log}[f]}}\right]}{16\,\sqrt{3\,f+c\,\mathrm{Log}[f]}}$$

Result (type 4, 2991 leaves):

$$\frac{1}{16\,(f-c\,\mathrm{Log}[f])\,(3\,f-c\,\mathrm{Log}[f])\,(f+c\,\mathrm{Log}[f])\,(3\,f+c\,\mathrm{Log}[f])}$$
$$f^a\,\sqrt{\pi}\,\Bigg(27\,e^{-\frac{-e^2+2\,b\,e\,\mathrm{Log}[f]-b^2\,\mathrm{Log}[f]^2}{4\,(f-c\,\mathrm{Log}[f])}}\,f^3\,\mathrm{Cosh}[d]\,\mathrm{Erf}\left[\frac{e+2\,f\,x-b\,\mathrm{Log}[f]-2\,c\,x\,\mathrm{Log}[f]}{2\,\sqrt{f-c\,\mathrm{Log}[f]}}\right]\,\sqrt{f-c\,\mathrm{Log}[f]}\,+$$
$$27\,c\,e^{-\frac{-e^2+2\,b\,e\,\mathrm{Log}[f]-b^2\,\mathrm{Log}[f]^2}{4\,(f-c\,\mathrm{Log}[f])}}\,f^2\,\mathrm{Cosh}[d]\,\mathrm{Erf}\left[\frac{e+2\,f\,x-b\,\mathrm{Log}[f]-2\,c\,x\,\mathrm{Log}[f]}{2\,\sqrt{f-c\,\mathrm{Log}[f]}}\right]\,\mathrm{Log}[f]\,\sqrt{f-c\,\mathrm{Log}[f]}\,-$$
$$3\,c^2\,e^{-\frac{-e^2+2\,b\,e\,\mathrm{Log}[f]-b^2\,\mathrm{Log}[f]^2}{4\,(f-c\,\mathrm{Log}[f])}}\,f\,\mathrm{Cosh}[d]\,\mathrm{Erf}\left[\frac{e+2\,f\,x-b\,\mathrm{Log}[f]-2\,c\,x\,\mathrm{Log}[f]}{2\,\sqrt{f-c\,\mathrm{Log}[f]}}\right]\,\mathrm{Log}[f]^2\,\sqrt{f-c\,\mathrm{Log}[f]}\,-$$
$$3\,c^3\,e^{-\frac{-e^2+2\,b\,e\,\mathrm{Log}[f]-b^2\,\mathrm{Log}[f]^2}{4\,(f-c\,\mathrm{Log}[f])}}\,\mathrm{Cosh}[d]\,\mathrm{Erf}\left[\frac{e+2\,f\,x-b\,\mathrm{Log}[f]-2\,c\,x\,\mathrm{Log}[f]}{2\,\sqrt{f-c\,\mathrm{Log}[f]}}\right]\,\mathrm{Log}[f]^3\,\sqrt{f-c\,\mathrm{Log}[f]}\,-$$
$$3\,e^{-\frac{-9\,e^2+6\,b\,e\,\mathrm{Log}[f]-b^2\,\mathrm{Log}[f]^2}{4\,(3\,f-c\,\mathrm{Log}[f])}}\,f^3\,\mathrm{Cosh}[3\,d]\,\mathrm{Erf}\left[\frac{3\,e+6\,f\,x-b\,\mathrm{Log}[f]-2\,c\,x\,\mathrm{Log}[f]}{2\,\sqrt{3\,f-c\,\mathrm{Log}[f]}}\right]\,\sqrt{3\,f-c\,\mathrm{Log}[f]}\,-$$
$$c\,e^{-\frac{-9\,e^2+6\,b\,e\,\mathrm{Log}[f]-b^2\,\mathrm{Log}[f]^2}{4\,(3\,f-c\,\mathrm{Log}[f])}}\,f^2\,\mathrm{Cosh}[3\,d]\,\mathrm{Erf}\left[\frac{3\,e+6\,f\,x-b\,\mathrm{Log}[f]-2\,c\,x\,\mathrm{Log}[f]}{2\,\sqrt{3\,f-c\,\mathrm{Log}[f]}}\right]$$
$$\mathrm{Log}[f]\,\sqrt{3\,f-c\,\mathrm{Log}[f]}\,+3\,c^2\,e^{-\frac{-9\,e^2+6\,b\,e\,\mathrm{Log}[f]-b^2\,\mathrm{Log}[f]^2}{4\,(3\,f-c\,\mathrm{Log}[f])}}\,f\,\mathrm{Cosh}[3\,d]$$
$$\mathrm{Erf}\left[\frac{3\,e+6\,f\,x-b\,\mathrm{Log}[f]-2\,c\,x\,\mathrm{Log}[f]}{2\,\sqrt{3\,f-c\,\mathrm{Log}[f]}}\right]\,\mathrm{Log}[f]^2\,\sqrt{3\,f-c\,\mathrm{Log}[f]}\,+c^3\,e^{-\frac{-9\,e^2+6\,b\,e\,\mathrm{Log}[f]-b^2\,\mathrm{Log}[f]^2}{4\,(3\,f-c\,\mathrm{Log}[f])}}$$
$$\mathrm{Cosh}[3\,d]\,\mathrm{Erf}\left[\frac{3\,e+6\,f\,x-b\,\mathrm{Log}[f]-2\,c\,x\,\mathrm{Log}[f]}{2\,\sqrt{3\,f-c\,\mathrm{Log}[f]}}\right]\,\mathrm{Log}[f]^3\,\sqrt{3\,f-c\,\mathrm{Log}[f]}\,-$$
$$27\,e^{-\frac{e^2+2\,b\,e\,\mathrm{Log}[f]+b^2\,\mathrm{Log}[f]^2}{4\,(f+c\,\mathrm{Log}[f])}}\,f^3\,\mathrm{Cosh}[d]\,\mathrm{Erfi}\left[\frac{e+2\,f\,x+b\,\mathrm{Log}[f]+2\,c\,x\,\mathrm{Log}[f]}{2\,\sqrt{f+c\,\mathrm{Log}[f]}}\right]\,\sqrt{f+c\,\mathrm{Log}[f]}\,+$$

$$27\,c\,e^{-\frac{e^2+2\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,f^2\,\text{Cosh}[d]\,\text{Erfi}\Big[\frac{e+2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{f+c\,\text{Log}[f]}\,+$$

$$3\,c^2\,e^{-\frac{e^2+2\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,f\,\text{Cosh}[d]\,\text{Erfi}\Big[\frac{e+2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{f+c\,\text{Log}[f]}\,-$$

$$3\,c^3\,e^{-\frac{e^2+2\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,\text{Cosh}[d]\,\text{Erfi}\Big[\frac{e+2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{f+c\,\text{Log}[f]}\,+$$

$$3\,e^{-\frac{9\,e^2+6\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f^3\,\text{Cosh}[3\,d]\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\sqrt{3\,f+c\,\text{Log}[f]}\,-$$

$$c\,e^{-\frac{9\,e^2+6\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f^2\,\text{Cosh}[3\,d]\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]$$

$$\text{Log}[f]\,\sqrt{3\,f+c\,\text{Log}[f]}\,-\,3\,c^2\,e^{-\frac{9\,e^2+6\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f\,\text{Cosh}[3\,d]$$

$$\text{Erfi}\Big[\frac{3\,e+6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{3\,f+c\,\text{Log}[f]}\,+\,c^3\,e^{-\frac{9\,e^2+6\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}$$

$$\text{Cosh}[3\,d]\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{3\,f+c\,\text{Log}[f]}\,-$$

$$27\,e^{-\frac{-e^2+2\,b\,e\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\,f^3\,\text{Erf}\Big[\frac{e+2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\Big]\,\sqrt{f-c\,\text{Log}[f]}\,\text{Sinh}[d]\,-$$

$$27\,c\,e^{-\frac{-e^2+2\,b\,e\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\,f^2\,\text{Erf}\Big[\frac{e+2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{f-c\,\text{Log}[f]}\,\text{Sinh}[d]\,+$$

$$3\,c^2\,e^{-\frac{-e^2+2\,b\,e\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\,f\,\text{Erf}\Big[\frac{e+2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{f-c\,\text{Log}[f]}\,\text{Sinh}[d]\,+$$

$$3\,c^3\,e^{-\frac{-e^2+2\,b\,e\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4\,(f-c\,\text{Log}[f])}}\,\text{Erf}\Big[\frac{e+2\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{f-c\,\text{Log}[f]}\,\text{Sinh}[d]\,-$$

$$27\,e^{-\frac{e^2+2\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,f^3\,\text{Erfi}\Big[\frac{e+2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\sqrt{f+c\,\text{Log}[f]}\,\text{Sinh}[d]\,+$$

$$27\,c\,e^{-\frac{e^2+2\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,f^2\,\text{Erfi}\Big[\frac{e+2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{f+c\,\text{Log}[f]}\,\text{Sinh}[d]\,+$$

$$3\,c^2\,e^{-\frac{e^2+2\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,f\,\text{Erfi}\Big[\frac{e+2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{f+c\,\text{Log}[f]}\,\text{Sinh}[d]\,-$$

$$3\,c^3\,e^{-\frac{e^2+2\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(f+c\,\text{Log}[f])}}\,\text{Erfi}\Big[\frac{e+2\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{f+c\,\text{Log}[f]}\,\text{Sinh}[d]\,+$$

$$3\,e^{-\frac{-9\,e^2+6\,b\,e\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f^3\,\text{Erf}\Big[\frac{3\,e+6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]\,\sqrt{3\,f-c\,\text{Log}[f]}\,\text{Sinh}[3\,d]\,+$$

$$c\,e^{-\frac{-9\,e^2+6\,b\,e\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f^2\,\text{Erf}\Big[\frac{3\,e+6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{3\,f-c\,\text{Log}[f]}$$

$$\text{Sinh}[3\,d] - 3\,c^2\,e^{-\frac{-9\,e^2+6\,b\,e\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4\,(3\,f-c\,\text{Log}[f])}}\,f\,\text{Erf}\Big[\frac{3\,e+6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]$$

$$\text{Log}[f]^2\,\sqrt{3\,f-c\,\text{Log}[f]}\,\,\text{Sinh}[3\,d] - c^3\,e^{-\frac{-9\,e^2+6\,b\,e\,\text{Log}[f]-b^2\,\text{Log}[f]^2}{4\,(3\,f-c\,\text{Log}[f])}}$$

$$\text{Erf}\Big[\frac{3\,e+6\,f\,x-b\,\text{Log}[f]-2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f-c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{3\,f-c\,\text{Log}[f]}\,\,\text{Sinh}[3\,d] +$$

$$3\,e^{-\frac{9\,e^2+6\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f^3\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\sqrt{3\,f+c\,\text{Log}[f]}\,\,\text{Sinh}[3\,d] -$$

$$c\,e^{-\frac{9\,e^2+6\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f^2\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{3\,f+c\,\text{Log}[f]}$$

$$\text{Sinh}[3\,d] - 3\,c^2\,e^{-\frac{9\,e^2+6\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}\,f\,\text{Erfi}\Big[\frac{3\,e+6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]$$

$$\text{Log}[f]^2\,\sqrt{3\,f+c\,\text{Log}[f]}\,\,\text{Sinh}[3\,d] + c^3\,e^{-\frac{9\,e^2+6\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2}{4\,(3\,f+c\,\text{Log}[f])}}$$

$$\text{Erfi}\Big[\frac{3\,e+6\,f\,x+b\,\text{Log}[f]+2\,c\,x\,\text{Log}[f]}{2\,\sqrt{3\,f+c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^3\,\sqrt{3\,f+c\,\text{Log}[f]}\,\,\text{Sinh}[3\,d]\Bigg)$$

Problem 368: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 213 leaves, 8 steps):

$$-\frac{\text{CoshIntegral}\Big[\frac{b\sqrt{-c}}{\sqrt{d}}+b\,x\Big]\,\text{Sinh}\Big[a-\frac{b\sqrt{-c}}{\sqrt{d}}\Big]}{2\,\sqrt{-c}\,\sqrt{d}} + \frac{\text{CoshIntegral}\Big[\frac{b\sqrt{-c}}{\sqrt{d}}-b\,x\Big]\,\text{Sinh}\Big[a+\frac{b\sqrt{-c}}{\sqrt{d}}\Big]}{2\,\sqrt{-c}\,\sqrt{d}} -$$

$$\frac{\text{Cosh}\Big[a+\frac{b\sqrt{-c}}{\sqrt{d}}\Big]\,\text{SinhIntegral}\Big[\frac{b\sqrt{-c}}{\sqrt{d}}-b\,x\Big]}{2\,\sqrt{-c}\,\sqrt{d}} - \frac{\text{Cosh}\Big[a-\frac{b\sqrt{-c}}{\sqrt{d}}\Big]\,\text{SinhIntegral}\Big[\frac{b\sqrt{-c}}{\sqrt{d}}+b\,x\Big]}{2\,\sqrt{-c}\,\sqrt{d}}$$

Result (type 4, 180 leaves):

$$\frac{1}{2\,\sqrt{c}\,\sqrt{d}}$$

$$i\,\Bigg(\text{CosIntegral}\Big[-\frac{b\,\sqrt{c}}{\sqrt{d}}+i\,b\,x\Big]\,\text{Sinh}\Big[a-\frac{i\,b\,\sqrt{c}}{\sqrt{d}}\Big]-\text{CosIntegral}\Big[\frac{b\,\sqrt{c}}{\sqrt{d}}+i\,b\,x\Big]\,\text{Sinh}\Big[a+\frac{i\,b\,\sqrt{c}}{\sqrt{d}}\Big]+$$

$$i\,\Bigg(\text{Cosh}\Big[a-\frac{i\,b\,\sqrt{c}}{\sqrt{d}}\Big]\,\text{SinIntegral}\Big[\frac{b\,\sqrt{c}}{\sqrt{d}}-i\,b\,x\Big]+$$

$$\text{Cosh}\Big[a+\frac{i\,b\,\sqrt{c}}{\sqrt{d}}\Big]\,\text{SinIntegral}\Big[\frac{b\,\sqrt{c}}{\sqrt{d}}+i\,b\,x\Big]\Bigg)\Bigg)$$

Problem 369: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 271 leaves, 8 steps):

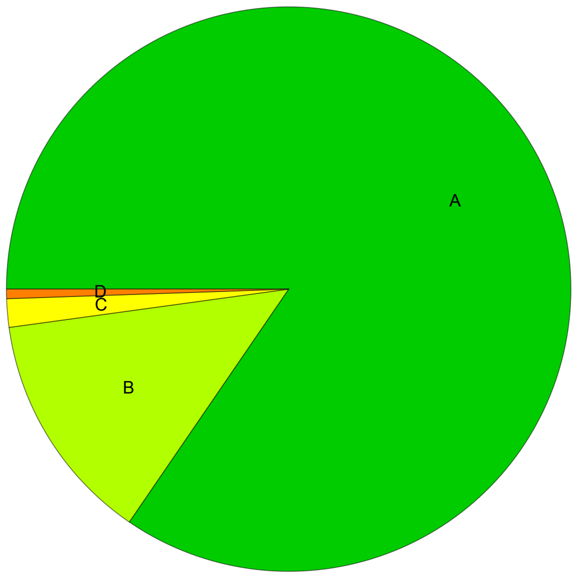
$$\frac{\text{CoshIntegral}\left[\frac{b\left(d-\sqrt{d^2-4\,c\,e}\right)}{2\,e}+b\,x\right]\,\text{Sinh}\left[a-\frac{b\left(d-\sqrt{d^2-4\,c\,e}\right)}{2\,e}\right]}{\sqrt{d^2-4\,c\,e}}-\frac{\text{CoshIntegral}\left[\frac{b\left(d+\sqrt{d^2-4\,c\,e}\right)}{2\,e}+b\,x\right]\,\text{Sinh}\left[a-\frac{b\left(d+\sqrt{d^2-4\,c\,e}\right)}{2\,e}\right]}{\sqrt{d^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

Result (type 4, 248 leaves):

$$\frac{1}{\sqrt{d^2-4\,c\,e}}\left(\text{CosIntegral}\left[\frac{i\,b\left(d-\sqrt{d^2-4\,c\,e}+2\,e\,x\right)}{2\,e}\right]\,\text{Sinh}\left[a+\frac{b\left(-d+\sqrt{d^2-4\,c\,e}\right)}{2\,e}\right]-\text{CosIntegral}\left[\frac{i\,b\left(d+\sqrt{d^2-4\,c\,e}+2\,e\,x\right)}{2\,e}\right]\,\text{Sinh}\left[a-\frac{b\left(d+\sqrt{d^2-4\,c\,e}\right)}{2\,e}\right]-\text{Cosh}\left[a-\frac{b\left(d+\sqrt{d^2-4\,c\,e}\right)}{2\,e}\right]\,\text{SinhIntegral}\left[\frac{b\left(d+\sqrt{d^2-4\,c\,e}+2\,e\,x\right)}{2\,e}\right]+i\,\text{Cosh}\left[a+\frac{b\left(-d+\sqrt{d^2-4\,c\,e}\right)}{2\,e}\right]\,\text{SinIntegral}\left[\frac{i\,b\left(-d+\sqrt{d^2-4\,c\,e}\right)}{2\,e}-i\,b\,x\right]\right)$$

Summary of Integration Test Results

369 integration problems



A - 312 optimal antiderivatives

B - 49 more than twice size of optimal antiderivatives

C - 6 unnecessarily complex antiderivatives

D - 2 unable to integrate problems

E - 0 integration timeouts