Mathematica 11.3 Integration Test Results

Test results for the 453 problems in "7.2.4a (f x)^m (d-c^2 d x^2)^p (a+b arccosh(c x))^n.m"

Problem 33: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 61 leaves, 7 steps):

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

Result (type 4, 124 leaves):

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

Problem 42: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 116 leaves, 9 steps):

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

Result (type 4, 243 leaves):

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

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

$$\left.2\,b\,\text{PolyLog}\left[2,\,-e^{-2\,\text{ArcCosh}[c\,x]}\right]+4\,b\,\text{PolyLog}\left[2,\,-e^{-\text{ArcCosh}[c\,x]}\right]+4\,b\,\text{PolyLog}\left[2,\,e^{-\text{ArcCosh}[c\,x]}\right]\right)$$

Problem 118: Unable to integrate problem.

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

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

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

Result (type 8, 26 leaves):

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

Problem 120: Unable to integrate problem.

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

Optimal (type 3, 159 leaves, 5 steps):

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

Result (type 8, 29 leaves):

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

Problem 122: Unable to integrate problem.

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

Optimal (type 3, 250 leaves, 6 steps):

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

Result (type 8, 29 leaves):

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

Problem 127: Unable to integrate problem.

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

Optimal (type 3, 160 leaves, 5 steps):

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

Result (type 8, 29 leaves):

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

Problem 129: Unable to integrate problem.

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

Optimal (type 3, 189 leaves, 5 steps):

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

Result (type 8, 26 leaves):

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

Problem 131: Unable to integrate problem.

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

Optimal (type 3, 279 leaves, 6 steps):

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

Result (type 8, 29 leaves):

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

Problem 133: Unable to integrate problem.

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

Optimal (type 3, 383 leaves, 6 steps):

$$\frac{b\,c\sqrt{-1+c\,x}\,\sqrt{1+c\,x}}{6\,d^2\,x^2\sqrt{d-c^2\,d\,x^2}}+\frac{b\,c^3\sqrt{-1+c\,x}\,\sqrt{1+c\,x}}{6\,d^2\left(1-c^2\,x^2\right)\sqrt{d-c^2\,d\,x^2}}+$$
$$\frac{16\,c^4\,x\left(a+b\,\text{ArcCosh}[c\,x]\right)}{3\,d^2\sqrt{d-c^2\,d\,x^2}}-\frac{a+b\,\text{ArcCosh}[c\,x]}{3\,d^2\,x^3\left(1-c\,x\right)\left(1+c\,x\right)\sqrt{d-c^2\,d\,x^2}}-$$
$$\frac{2\,c^2\left(a+b\,\text{ArcCosh}[c\,x]\right)}{d^2\,x\left(1-c\,x\right)\left(1+c\,x\right)\sqrt{d-c^2\,d\,x^2}}+\frac{8\,c^4\,x\left(a+b\,\text{ArcCosh}[c\,x]\right)}{3\,d^2\left(1-c\,x\right)\left(1+c\,x\right)\sqrt{d-c^2\,d\,x^2}}-$$
$$\frac{8\,b\,c^3\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\text{Log}[x]}{3\,d^2\sqrt{d-c^2\,d\,x^2}}-\frac{4\,b\,c^3\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\text{Log}\left[1-c^2\,x^2\right]}{3\,d^2\sqrt{d-c^2\,d\,x^2}}$$

Result (type 8, 29 leaves):

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

Problem 143: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(f\,x)^{3/2}\left(a + b\,\text{ArcCosh}[c\,x]\right)}{\sqrt{1 - c^2\,x^2}}\,dx$$

Optimal (type 5, 111 leaves, 2 steps):

$$\frac{2\,(f\,x)^{5/2}\left(a + b\,\text{ArcCosh}[c\,x]\right)\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{5}{4}, \frac{9}{4}, c^2\,x^2\right]}{5\,f} + \frac{1}{35\,f^2\sqrt{1 - c^2\,x^2}}$$
$$4\,b\,c\,(f\,x)^{7/2}\sqrt{-1 + c\,x}\,\sqrt{1 + c\,x}\,\text{HypergeometricPFQ}\left[\left\{1, \frac{7}{4}, \frac{7}{4}\right\}, \left\{\frac{9}{4}, \frac{11}{4}\right\}, c^2\,x^2\right]$$

Result (type 5, 230 leaves):

$$\frac{1}{36\,c^2\sqrt{1 - c^2\,x^2}}f\sqrt{f\,x}\left(\frac{24\,i\,a\sqrt{1 - \frac{1}{c^2\,x^2}}\,\sqrt{x}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-\frac{1}{c}}}{\sqrt{x}}\right], -1\right]}{\sqrt{-\frac{1}{c}}} + \right.$$
$$8\,(1 + c\,x)\left(-3\,a + 3\,a\,c\,x - 2\,b\,c\,x\sqrt{\frac{-1 + c\,x}{1 + c\,x}} + 3\,b\,(-1 + c\,x)\,\text{ArcCosh}[c\,x] - \right.$$
$$\left.\left. 3\,b\,(-1 + c\,x)\,\text{ArcCosh}[c\,x]\,\text{Hypergeometric2F1}\left[\frac{3}{4}, 1, \frac{5}{4}, c^2\,x^2\right]\right) +$$
$$\left.\left(3\sqrt{2}\,b\,c\,\pi\,x\sqrt{\frac{-1 + c\,x}{1 + c\,x}}\,(1 + c\,x)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4}, \frac{3}{4}, 1\right\}, \left\{\frac{5}{4}, \frac{7}{4}\right\}, c^2\,x^2\right]\right)\Big/\right.$$
$$\left.\left(\text{Gamma}\left[\frac{5}{4}\right]\text{Gamma}\left[\frac{7}{4}\right]\right)\right)$$

Problem 144: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 5, 141 leaves, 2 steps):

$$\frac{1}{5 f \sqrt{d - c^2 d x^2}} 2 (f x)^{5/2} \sqrt{1 - c^2 x^2} \left(a + b \operatorname{ArcCosh}[c x]\right) \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{5}{4}, \frac{9}{4}, c^2 x^2\right] + \left(4 b c (f x)^{7/2} \sqrt{-1 + c x} \sqrt{1 + c x} \operatorname{HypergeometricPFQ}\left[\left\{1, \frac{7}{4}, \frac{7}{4}\right\}, \left\{\frac{9}{4}, \frac{11}{4}\right\}, c^2 x^2\right]\right) \Big/ \left(35 f^2 \sqrt{d - c^2 d x^2}\right)$$

Result (type 5, 241 leaves):

$$\frac{1}{36 c^2 \sqrt{d - c^2 d x^2} \operatorname{Gamma}\left[\frac{5}{4}\right] \operatorname{Gamma}\left[\frac{7}{4}\right]}$$

$$f \sqrt{f x} \left(8 \operatorname{Gamma}\left[\frac{5}{4}\right] \operatorname{Gamma}\left[\frac{7}{4}\right] \left(\frac{3 i a \sqrt{1 - \frac{1}{c^2 x^2}} \sqrt{x} \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\frac{\sqrt{-\frac{1}{c}}}{\sqrt{x}}\right], -1\right]}{\sqrt{-\frac{1}{c}}} + (1 + c x) \left(-3 a + 3 a c x - 2 b c x \sqrt{\frac{-1 + c x}{1 + c x}} + 3 b (-1 + c x) \operatorname{ArcCosh}[c x] - 3 b (-1 + c x) \operatorname{ArcCosh}[c x] \operatorname{Hypergeometric2F1}\left[\frac{3}{4}, 1, \frac{5}{4}, c^2 x^2\right]\right)\right) + 3 \sqrt{2} b c \pi x \sqrt{\frac{-1 + c x}{1 + c x}} (1 + c x) \operatorname{HypergeometricPFQ}\left[\left\{\frac{3}{4}, \frac{3}{4}, 1\right\}, \left\{\frac{5}{4}, \frac{7}{4}\right\}, c^2 x^2\right]\right)$$

Problem 145: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 389 leaves, 8 steps):

$$-\frac{b\,c\,d^3\left(2271+1329\,m+284\,m^2+27\,m^3+m^4\right)x^{2+m}\left(1-c^2x^2\right)}{(3+m)^2(5+m)^2(7+m)^2\sqrt{-1+c\,x}\sqrt{1+c\,x}}+$$
$$\frac{b\,c^3\,d^3\,(9+m)\,(13+2\,m)\,x^{4+m}\left(1-c^2x^2\right)}{(5+m)^2(7+m)^2\sqrt{-1+c\,x}\sqrt{1+c\,x}}-\frac{b\,c^5\,d^3\,x^{6+m}\left(1-c^2x^2\right)}{(7+m)^2\sqrt{-1+c\,x}\sqrt{1+c\,x}}+$$
$$\frac{d^3\,x^{1+m}\left(a+b\,\text{ArcCosh}[c\,x]\right)}{1+m}-\frac{3\,c^2\,d^3\,x^{3+m}\left(a+b\,\text{ArcCosh}[c\,x]\right)}{3+m}+\frac{3\,c^4\,d^3\,x^{5+m}\left(a+b\,\text{ArcCosh}[c\,x]\right)}{5+m}-$$
$$\frac{c^6\,d^3\,x^{7+m}\left(a+b\,\text{ArcCosh}[c\,x]\right)}{7+m}-\left(3\,b\,c\,d^3\left(2161+1813\,m+455\,m^2+35\,m^3\right)\right.$$
$$\left.x^{2+m}\sqrt{1-c^2x^2}\;\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2+m}{2},\frac{4+m}{2},c^2x^2\right]\right)\Big/$$
$$\left((1+m)(2+m)(3+m)^2(5+m)^2(7+m)^2\sqrt{-1+c\,x}\sqrt{1+c\,x}\right)$$

Result (type 6, 3418 leaves):

$$\frac{a\,d^3\,x^{1+m}}{1+m}-\frac{3\,a\,c^2\,d^3\,x^{3+m}}{3+m}+\frac{3\,a\,c^4\,d^3\,x^{5+m}}{5+m}-\frac{a\,c^6\,d^3\,x^{7+m}}{7+m}+\frac{1}{c}b\,d^3\,x^m\,(c\,x)^{-m}$$
$$\left(-\frac{1}{1+m}12\,(c\,x)^m\left(\left(\sqrt{-1+c\,x}\sqrt{1+c\,x}\;\text{AppellF1}\left[\frac{1}{2},-m,-\frac{1}{2},\frac{3}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]\right)\Big/\right.$$
$$\left(6\,\text{AppellF1}\left[\frac{1}{2},-m,-\frac{1}{2},\frac{3}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]+(-1+c\,x)\left(4\,m\,\text{AppellF1}\left[\frac{3}{2},1-m,\right.\right.\right.$$
$$\left.\left.\left.-\frac{1}{2},\frac{5}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]+\text{AppellF1}\left[\frac{3}{2},-m,\frac{1}{2},\frac{5}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]\right)\right)-$$
$$\left(\sqrt{\frac{-1+c\,x}{1+c\,x}}\;\text{AppellF1}\left[\frac{1}{2},-m,\frac{1}{2},\frac{3}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]\right)\Big/$$
$$\left(6\,\text{AppellF1}\left[\frac{1}{2},-m,\frac{1}{2},\frac{3}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]+(-1+c\,x)\left(4\,m\,\text{AppellF1}\left[\frac{3}{2},1-m,\frac{1}{2},\right.\right.\right.$$
$$\left.\left.\left.\frac{5}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]-\text{AppellF1}\left[\frac{3}{2},-m,\frac{3}{2},\frac{5}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]\right)\right)+$$
$$\left.\frac{(c\,x)^{1+m}\,\text{ArcCosh}[c\,x]}{1+m}\right)-3\,b\,c\,d^3\,x^{2+m}\,(c\,x)^{-2-m}\left(-\frac{1}{3+m}4\,(c\,x)^m\right.$$
$$\left(\left(3\sqrt{-1+c\,x}\sqrt{1+c\,x}\;\text{AppellF1}\left[\frac{1}{2},-m,-\frac{1}{2},\frac{3}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]\right)\Big/\right.$$
$$\left(6\,\text{AppellF1}\left[\frac{1}{2},-m,-\frac{1}{2},\frac{3}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]+(-1+c\,x)\left(4\,m\,\text{AppellF1}\left[\frac{3}{2},1-m,\right.\right.\right.$$
$$\left.\left.\left.-\frac{1}{2},\frac{5}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]+\text{AppellF1}\left[\frac{3}{2},-m,\frac{1}{2},\frac{5}{2},1-c\,x,\frac{1}{2}(1-c\,x)\right]\right)\right)-$$

$$\left(3\sqrt{\frac{-1+c\,x}{1+c\,x}}\ \text{AppellF1}\left[\frac{1}{2},\,-m,\,\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$
$$\left(6\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{3}{2},\,1-m,\,\frac{1}{2},\right.\right.\right.$$
$$\left.\left.\left.\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]-\text{AppellF1}\left[\frac{3}{2},\,-m,\,\frac{3}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)+$$
$$\left(-1+c\,x\right)^{3/2}\sqrt{1+c\,x}\ \left(\left(5\,\text{AppellF1}\left[\frac{3}{2},\,-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\right.$$
$$\left(30\,\text{AppellF1}\left[\frac{3}{2},\,-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+3\left(-1+c\,x\right)\right.$$
$$\left(4\,m\,\text{AppellF1}\left[\frac{5}{2},\,1-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{5}{2},\,-m,\,\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)+$$
$$\left(7\left(-1+c\,x\right)\text{AppellF1}\left[\frac{5}{2},\,-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$
$$\left(70\,\text{AppellF1}\left[\frac{5}{2},\,-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+5\left(-1+c\,x\right)\right.$$
$$\left(4\,m\,\text{AppellF1}\left[\frac{7}{2},\,1-m,\,-\frac{1}{2},\,\frac{9}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{7}{2},\,-m,\,\frac{1}{2},\,\frac{9}{2},\right.\right.$$
$$\left.\left.\left.\left.1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)\right)+\frac{(c\,x)^{3+m}\,\text{ArcCosh}[c\,x]}{3+m}\Bigg)+3\,b\,c^3\,d^3\,x^{4+m}\,(c\,x)^{-4-m}$$

$$\left(-\frac{1}{5+m}\left(\left(12\,(c\,x)^m\sqrt{-1+c\,x}\ \sqrt{1+c\,x}\ \text{AppellF1}\left[\frac{1}{2},\,-m,\,-\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\right.\right.$$
$$\left(6\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,-\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{3}{2},\,1-m,\right.\right.\right.$$
$$\left.\left.\left.-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{3}{2},\,-m,\,\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)-$$
$$\left(12\,(c\,x)^m\sqrt{\frac{-1+c\,x}{1+c\,x}}\ \text{AppellF1}\left[\frac{1}{2},\,-m,\,\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$
$$\left(6\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\right.$$
$$4\,m\left(-1+c\,x\right)\text{AppellF1}\left[\frac{3}{2},\,1-m,\,\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]-$$
$$\left.\left(-1+c\,x\right)\text{AppellF1}\left[\frac{3}{2},\,-m,\,\frac{3}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)+$$
$$\left(40\,(c\,x)^m\left(-1+c\,x\right)^{3/2}\sqrt{1+c\,x}\ \text{AppellF1}\left[\frac{3}{2},\,-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$
$$\left(30\,\text{AppellF1}\left[\frac{3}{2},\,-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+3\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{5}{2},\,1-m,\right.\right.\right.$$

$$-\frac{1}{2},\ \frac{7}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]+\text{AppellF1}\Big[\frac{5}{2},\ -m,\ \frac{1}{2},\ \frac{7}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\Big)\Big)+$$

$$\left(112\,(c\,x)^m\left(-1+c\,x\right)^{5/2}\sqrt{1+c\,x}\ \text{AppellF1}\Big[\frac{5}{2},\ -m,\ -\frac{1}{2},\ \frac{7}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\right)\Big/$$

$$\Big(70\,\text{AppellF1}\Big[\frac{5}{2},\ -m,\ -\frac{1}{2},\ \frac{7}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]+5\left(-1+c\,x\right)\Big(4\,m\,\text{AppellF1}\Big[\frac{7}{2},\ 1-m,$$

$$-\frac{1}{2},\ \frac{9}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]+\text{AppellF1}\Big[\frac{7}{2},\ -m,\ \frac{1}{2},\ \frac{9}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\Big)\Big)+$$

$$\left(108\,(c\,x)^m\left(-1+c\,x\right)^{7/2}\sqrt{1+c\,x}\ \text{AppellF1}\Big[\frac{7}{2},\ -m,\ -\frac{1}{2},\ \frac{9}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\right)\Big/$$

$$\Big(7\Big(18\,\text{AppellF1}\Big[\frac{7}{2},\ -m,\ -\frac{1}{2},\ \frac{9}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]+$$

$$\left(-1+c\,x\right)\Big(4\,m\,\text{AppellF1}\Big[\frac{9}{2},\ 1-m,\ -\frac{1}{2},\ \frac{11}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]+$$

$$\text{AppellF1}\Big[\frac{9}{2},\ -m,\ \frac{1}{2},\ \frac{11}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\Big)\Big)\Big)+$$

$$\left(44\,(c\,x)^m\left(-1+c\,x\right)^{9/2}\sqrt{1+c\,x}\ \text{AppellF1}\Big[\frac{9}{2},\ -m,\ -\frac{1}{2},\ \frac{11}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\right)\Big/$$

$$\Big(9\Big(22\,\text{AppellF1}\Big[\frac{9}{2},\ -m,\ -\frac{1}{2},\ \frac{11}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]+\left(-1+c\,x\right)$$

$$\Big(4\,m\,\text{AppellF1}\Big[\frac{11}{2},\ 1-m,\ -\frac{1}{2},\ \frac{13}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]+\text{AppellF1}\Big[\frac{11}{2},\ -m,\ \frac{1}{2},$$

$$\frac{13}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\Big)\Big)\Big)+\frac{(c\,x)^{5+m}\,\text{ArcCosh}\left[c\,x\right]}{5+m}\Big)-b\,c^5\,d^3\,x^{6+m}\,(c\,x)^{-6-m}$$

$$\left(-\frac{1}{7+m}\left(\left(12\,(c\,x)^m\sqrt{-1+c\,x}\ \sqrt{1+c\,x}\ \text{AppellF1}\Big[\frac{1}{2},\ -m,\ -\frac{1}{2},\ \frac{3}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\right)\Big/\right.$$

$$\Big(6\,\text{AppellF1}\Big[\frac{1}{2},\ -m,\ -\frac{1}{2},\ \frac{3}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]+\left(-1+c\,x\right)\Big(4\,m\,\text{AppellF1}\Big[\frac{3}{2},\ 1-m,$$

$$-\frac{1}{2},\ \frac{5}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]+\text{AppellF1}\Big[\frac{3}{2},\ -m,\ \frac{1}{2},\ \frac{5}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\Big)\Big)-$$

$$\left(12\,(c\,x)^m\sqrt{\frac{-1+c\,x}{1+c\,x}}\ \text{AppellF1}\Big[\frac{1}{2},\ -m,\ \frac{1}{2},\ \frac{3}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\right)\Big/$$

$$\Big(6\,\text{AppellF1}\Big[\frac{1}{2},\ -m,\ \frac{1}{2},\ \frac{3}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]+$$

$$4\,m\left(-1+c\,x\right)\text{AppellF1}\Big[\frac{3}{2},\ 1-m,\ \frac{1}{2},\ \frac{5}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]-$$

$$\left(-1+c\,x\right)\text{AppellF1}\Big[\frac{3}{2},\ -m,\ \frac{3}{2},\ \frac{5}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\Big)+$$

$$\left(60\,(c\,x)^m\left(-1+c\,x\right)^{3/2}\sqrt{1+c\,x}\ \text{AppellF1}\Big[\frac{3}{2},\ -m,\ -\frac{1}{2},\ \frac{5}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]\right)\Big/$$

$$\Big(30\,\text{AppellF1}\Big[\frac{3}{2},\ -m,\ -\frac{1}{2},\ \frac{5}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\Big]+3\left(-1+c\,x\right)\Big(4\,m\,\text{AppellF1}\Big[\frac{5}{2},\ 1-m,$$

$$\left(-\frac{1}{2},\ \frac{7}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{5}{2},\ -m,\ \frac{1}{2},\ \frac{7}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]\Bigg)\Bigg)+$$
$$\left(252\,(c\,x)^m\left(-1+c\,x\right)^{5/2}\sqrt{1+c\,x}\ \text{AppellF1}\left[\frac{5}{2},\ -m,\ -\frac{1}{2},\ \frac{7}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$
$$\Bigg(70\,\text{AppellF1}\left[\frac{5}{2},\ -m,\ -\frac{1}{2},\ \frac{7}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]+5\left(-1+c\,x\right)\Bigg(4\,m\,\text{AppellF1}\left[\frac{7}{2},\ 1-m,$$
$$\left(-\frac{1}{2},\ \frac{9}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{7}{2},\ -m,\ \frac{1}{2},\ \frac{9}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]\Bigg)\Bigg)+$$
$$\left(468\,(c\,x)^m\left(-1+c\,x\right)^{7/2}\sqrt{1+c\,x}\ \text{AppellF1}\left[\frac{7}{2},\ -m,\ -\frac{1}{2},\ \frac{9}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$
$$\Bigg(7\Bigg(18\,\text{AppellF1}\left[\frac{7}{2},\ -m,\ -\frac{1}{2},\ \frac{9}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]+$$
$$\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{9}{2},\ 1-m,\ -\frac{1}{2},\ \frac{11}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]+\right.$$
$$\left.\text{AppellF1}\left[\frac{9}{2},\ -m,\ \frac{1}{2},\ \frac{11}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]\right)\Bigg)\Bigg)+$$
$$\left(484\,(c\,x)^m\left(-1+c\,x\right)^{9/2}\sqrt{1+c\,x}\ \text{AppellF1}\left[\frac{9}{2},\ -m,\ -\frac{1}{2},\ \frac{11}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$
$$\Bigg(9\Bigg(22\,\text{AppellF1}\left[\frac{9}{2},\ -m,\ -\frac{1}{2},\ \frac{11}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]+$$
$$\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{11}{2},\ 1-m,\ -\frac{1}{2},\ \frac{13}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]+\right.$$
$$\left.\text{AppellF1}\left[\frac{11}{2},\ -m,\ \frac{1}{2},\ \frac{13}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]\right)\Bigg)\Bigg)+$$
$$\left(260\,(c\,x)^m\left(-1+c\,x\right)^{11/2}\sqrt{1+c\,x}\ \text{AppellF1}\left[\frac{11}{2},\ -m,\ -\frac{1}{2},\ \frac{13}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$
$$\Bigg(11\Bigg(26\,\text{AppellF1}\left[\frac{11}{2},\ -m,\ -\frac{1}{2},\ \frac{13}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]+$$
$$\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{13}{2},\ 1-m,\ -\frac{1}{2},\ \frac{15}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]+\right.$$
$$\left.\text{AppellF1}\left[\frac{13}{2},\ -m,\ \frac{1}{2},\ \frac{15}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]\right)\Bigg)\Bigg)+$$
$$\left(60\,(c\,x)^m\left(-1+c\,x\right)^{13/2}\sqrt{1+c\,x}\ \text{AppellF1}\left[\frac{13}{2},\ -m,\ -\frac{1}{2},\ \frac{15}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$
$$\Bigg(13\Bigg(30\,\text{AppellF1}\left[\frac{13}{2},\ -m,\ -\frac{1}{2},\ \frac{15}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]+$$
$$\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{15}{2},\ 1-m,\ -\frac{1}{2},\ \frac{17}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]+\right.$$
$$\left.\text{AppellF1}\left[\frac{15}{2},\ -m,\ \frac{1}{2},\ \frac{17}{2},\ 1-c\,x,\ \frac{1}{2}\left(1-c\,x\right)\right]\right)\Bigg)\Bigg)+\frac{(c\,x)^{7+m}\,\text{ArcCosh}\left[c\,x\right]}{7+m}\Bigg)$$

Problem 146: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int x^m \left(d - c^2 d x^2\right)^2 \left(a + b \operatorname{ArcCosh}[c x]\right) \mathrm{d}x$$

Optimal (type 5, 277 leaves, 7 steps):

$$-\frac{b c d^2 \left(38 + 13 m + m^2\right) x^{2+m} \left(1 - c^2 x^2\right)}{(3+m)^2 (5+m)^2 \sqrt{-1+c x} \sqrt{1+c x}} + \frac{b c^3 d^2 x^{4+m} \left(1 - c^2 x^2\right)}{(5+m)^2 \sqrt{-1+c x} \sqrt{1+c x}} +$$
$$\frac{d^2 x^{1+m} \left(a + b \operatorname{ArcCosh}[c x]\right)}{1+m} - \frac{2 c^2 d^2 x^{3+m} \left(a + b \operatorname{ArcCosh}[c x]\right)}{3+m} + \frac{c^4 d^2 x^{5+m} \left(a + b \operatorname{ArcCosh}[c x]\right)}{5+m} -$$
$$\left(b c d^2 \left(149 + 100 m + 15 m^2\right) x^{2+m} \sqrt{1 - c^2 x^2} \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{2+m}{2}, \frac{4+m}{2}, c^2 x^2\right]\right) \Big/$$
$$\left((1+m)(2+m)(3+m)^2 (5+m)^2 \sqrt{-1+c x} \sqrt{1+c x}\right)$$

Result (type 6, 2070 leaves):

$$\frac{a d^2 x^{1+m}}{1+m} - \frac{2 a c^2 d^2 x^{3+m}}{3+m} + \frac{a c^4 d^2 x^{5+m}}{5+m} + \frac{1}{c} b d^2 x^m (c x)^{-m}$$
$$\left(-\frac{1}{1+m} 12 (c x)^m \left(\left(\sqrt{-1+c x} \sqrt{1+c x} \operatorname{AppellF1}\left[\frac{1}{2}, -m, -\frac{1}{2}, \frac{3}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right]\right) \Big/ \right.\right.$$
$$\left(6 \operatorname{AppellF1}\left[\frac{1}{2}, -m, -\frac{1}{2}, \frac{3}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right] + (-1 + c x)\left(4 m \operatorname{AppellF1}\left[\frac{3}{2}, 1 - m, -\frac{1}{2}, \frac{5}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right] + \operatorname{AppellF1}\left[\frac{3}{2}, -m, \frac{1}{2}, \frac{5}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right]\right)\right) -$$
$$\left(\sqrt{\frac{-1+c x}{1+c x}} \operatorname{AppellF1}\left[\frac{1}{2}, -m, \frac{1}{2}, \frac{3}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right]\right) \Big/$$
$$\left(6 \operatorname{AppellF1}\left[\frac{1}{2}, -m, \frac{1}{2}, \frac{3}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right] + (-1 + c x)\left(4 m \operatorname{AppellF1}\left[\frac{3}{2}, 1 - m, \frac{1}{2}, \frac{5}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right] - \operatorname{AppellF1}\left[\frac{3}{2}, -m, \frac{3}{2}, \frac{5}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right]\right)\right) +$$
$$\left.\left.\frac{(c x)^{1+m} \operatorname{ArcCosh}[c x]}{1+m}\right) - 2 b c d^2 x^{2+m} (c x)^{-2-m} \left(-\frac{1}{3+m} 4 (c x)^m \right.\right.$$
$$\left(\left(3 \sqrt{-1+c x} \sqrt{1+c x} \operatorname{AppellF1}\left[\frac{1}{2}, -m, -\frac{1}{2}, \frac{3}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right]\right) \Big/ \right.$$
$$\left(6 \operatorname{AppellF1}\left[\frac{1}{2}, -m, -\frac{1}{2}, \frac{3}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right] + (-1 + c x)\left(4 m \operatorname{AppellF1}\left[\frac{3}{2}, 1 - m, -\frac{1}{2}, \frac{5}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right] + \operatorname{AppellF1}\left[\frac{3}{2}, -m, \frac{1}{2}, \frac{5}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right]\right)\right) -$$
$$\left.\left(3 \sqrt{\frac{-1+c x}{1+c x}} \operatorname{AppellF1}\left[\frac{1}{2}, -m, \frac{1}{2}, \frac{3}{2}, 1 - c x, \frac{1}{2}(1 - c x)\right]\right) \Big/ \right.$$

$$\left(6\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{3}{2},\,1-m,\,\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]-\text{AppellF1}\left[\frac{3}{2},\,-m,\,\frac{3}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)+\left(-1+c\,x\right)^{3/2}\sqrt{1+c\,x}\left(\left(5\,\text{AppellF1}\left[\frac{3}{2},\,-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\left(30\,\text{AppellF1}\left[\frac{3}{2},\,-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+3\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{5}{2},\,1-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{5}{2},\,-m,\,\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)+\left(7\left(-1+c\,x\right)\text{AppellF1}\left[\frac{5}{2},\,-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\left(70\,\text{AppellF1}\left[\frac{5}{2},\,-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+5\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{7}{2},\,1-m,\,-\frac{1}{2},\,\frac{9}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{7}{2},\,-m,\,\frac{1}{2},\,\frac{9}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)\right)+\frac{\left(c\,x\right)^{3+m}\text{ArcCosh}\left[c\,x\right]}{3+m}\right)+b\,c^3\,d^2\,x^{4+m}\left(c\,x\right)^{-4-m}$$

$$\left(-\frac{1}{5+m}\left(\left(12\left(c\,x\right)^m\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,-\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\left(6\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,-\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{3}{2},\,1-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{3}{2},\,-m,\,\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)-\left(12\left(c\,x\right)^m\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\left(6\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+4\,m\left(-1+c\,x\right)\text{AppellF1}\left[\frac{3}{2},\,1-m,\,\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]-\left(-1+c\,x\right)\text{AppellF1}\left[\frac{3}{2},\,-m,\,\frac{3}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)+\left(40\left(c\,x\right)^m\left(-1+c\,x\right)^{3/2}\sqrt{1+c\,x}\,\text{AppellF1}\left[\frac{3}{2},\,-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\left(30\,\text{AppellF1}\left[\frac{3}{2},\,-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+3\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{5}{2},\,1-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{5}{2},\,-m,\,\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)+\left(112\left(c\,x\right)^m\left(-1+c\,x\right)^{5/2}\sqrt{1+c\,x}\,\text{AppellF1}\left[\frac{5}{2},\,-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$

$$\left(70\,\text{AppellF1}\left[\frac{5}{2},\,-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+5\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{7}{2},\,1-m,\,-\frac{1}{2},\,\frac{9}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{7}{2},\,-m,\,\frac{1}{2},\,\frac{9}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)+\left(108\,(c\,x)^m\left(-1+c\,x\right)^{7/2}\sqrt{1+c\,x}\,\text{AppellF1}\left[\frac{7}{2},\,-m,\,-\frac{1}{2},\,\frac{9}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\left(7\left(18\,\text{AppellF1}\left[\frac{7}{2},\,-m,\,-\frac{1}{2},\,\frac{9}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{9}{2},\,1-m,\,-\frac{1}{2},\,\frac{11}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{9}{2},\,-m,\,\frac{1}{2},\,\frac{11}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)\right)+\left(44\,(c\,x)^m\left(-1+c\,x\right)^{9/2}\sqrt{1+c\,x}\,\text{AppellF1}\left[\frac{9}{2},\,-m,\,-\frac{1}{2},\,\frac{11}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\left(9\left(22\,\text{AppellF1}\left[\frac{9}{2},\,-m,\,-\frac{1}{2},\,\frac{11}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{11}{2},\,1-m,\,-\frac{1}{2},\,\frac{13}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{11}{2},\,-m,\,\frac{1}{2},\,\frac{13}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)\right)+\frac{(c\,x)^{5+m}\,\text{ArcCosh}\left[c\,x\right]}{5+m}\Bigg)$$

Problem 147: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 164 leaves, 6 steps):

$$\frac{b\,c\,d\,x^{2+m}\sqrt{-1+c\,x}\,\sqrt{1+c\,x}}{\left(3+m\right)^2}+\frac{d\,x^{1+m}\left(a+b\,\text{ArcCosh}\left[c\,x\right]\right)}{1+m}-\frac{c^2\,d\,x^{3+m}\left(a+b\,\text{ArcCosh}\left[c\,x\right]\right)}{3+m}-\frac{b\,c\,d\left(7+3\,m\right)x^{2+m}\sqrt{1-c^2\,x^2}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{2+m}{2},\,\frac{4+m}{2},\,c^2\,x^2\right]}{\left(1+m\right)\left(2+m\right)\left(3+m\right)^2\sqrt{-1+c\,x}\,\sqrt{1+c\,x}}$$

Result (type 6, 1038 leaves):

$$\frac{a\,d\,x^{1+m}}{1+m}-\frac{a\,c^2\,d\,x^{3+m}}{3+m}+\frac{1}{c}b\,d\,x^m\,(c\,x)^{-m}\left(-\frac{1}{1+m}12\,(c\,x)^m\left(\left(\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,-\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\left(6\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,-\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{3}{2},\,1-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{3}{2},\,-m,\,\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)-\right.$$

$$\left(\sqrt{\frac{-1+c\,x}{1+c\,x}}\ \text{AppellF1}\left[\frac{1}{2},\,-m,\,\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$
$$\left(6\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{3}{2},\,1-m,\,\frac{1}{2},\right.\right.\right.$$
$$\left.\left.\left.\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]-\text{AppellF1}\left[\frac{3}{2},\,-m,\,\frac{3}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)+$$
$$\left.\frac{\left(c\,x\right)^{1+m}\,\text{ArcCosh}\left[c\,x\right]}{1+m}\right)-b\,c\,d\,x^{2+m}\,\left(c\,x\right)^{-2-m}\left(-\frac{1}{3+m}4\,\left(c\,x\right)^{m}\right.$$
$$\left(\left(3\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\ \text{AppellF1}\left[\frac{1}{2},\,-m,\,-\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\right.$$
$$\left(6\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,-\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{3}{2},\,1-m,\right.\right.\right.$$
$$\left.\left.\left.-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{3}{2},\,-m,\,\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)-$$
$$\left(3\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\ \text{AppellF1}\left[\frac{1}{2},\,-m,\,\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/$$
$$\left(6\,\text{AppellF1}\left[\frac{1}{2},\,-m,\,\frac{1}{2},\,\frac{3}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{3}{2},\,1-m,\,\frac{1}{2},\right.\right.\right.$$
$$\left.\left.\left.\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]-\text{AppellF1}\left[\frac{3}{2},\,-m,\,\frac{3}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)+$$
$$\left(-1+c\,x\right)^{3/2}\sqrt{1+c\,x}\ \left(\left(5\,\text{AppellF1}\left[\frac{3}{2},\,-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\right.$$
$$\left(30\,\text{AppellF1}\left[\frac{3}{2},\,-m,\,-\frac{1}{2},\,\frac{5}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+3\,\left(-1+c\,x\right)\right.$$
$$\left(4\,m\,\text{AppellF1}\left[\frac{5}{2},\,1-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\text{AppellF1}\left[\frac{5}{2},\,-m,\,\frac{1}{2},\right.\right.$$
$$\left.\left.\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)+\left(7\,\left(-1+c\,x\right)\,\text{AppellF1}\left[\frac{5}{2},\,-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\right.\right.$$
$$\left.\left.\frac{1}{2}\left(1-c\,x\right)\right]\right)\Big/\left(70\,\text{AppellF1}\left[\frac{5}{2},\,-m,\,-\frac{1}{2},\,\frac{7}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+5\right.$$
$$\left(-1+c\,x\right)\left(4\,m\,\text{AppellF1}\left[\frac{7}{2},\,1-m,\,-\frac{1}{2},\,\frac{9}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]+\right.$$
$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{7}{2},\,-m,\,\frac{1}{2},\,\frac{9}{2},\,1-c\,x,\,\frac{1}{2}\left(1-c\,x\right)\right]\right)\right)\right)+\left.\left.\frac{\left(c\,x\right)^{3+m}\,\text{ArcCosh}\left[c\,x\right]}{3+m}\right)\right)$$

Problem 151: Unable to integrate problem.

$$\int x^m \left(d - c^2 d x^2\right)^{5/2} \left(a + b \text{ArcCosh}[c x]\right) dx$$

Optimal (type 5, 709 leaves, 10 steps):

$$-\frac{15 b c d^2 x^{2+m} \sqrt{d - c^2 d x^2}}{(2+m)^2 (4+m) (6+m) \sqrt{-1+cx} \sqrt{1+cx}} - \frac{5 b c d^2 x^{2+m} \sqrt{d - c^2 d x^2}}{(6+m) \left(8+6m+m^2\right) \sqrt{-1+cx} \sqrt{1+cx}} - \frac{b c d^2 x^{2+m} \sqrt{d - c^2 d x^2}}{\left(12+8m+m^2\right) \sqrt{-1+cx} \sqrt{1+cx}} + \frac{5 b c^3 d^2 x^{4+m} \sqrt{d - c^2 d x^2}}{(4+m)^2 (6+m) \sqrt{-1+cx} \sqrt{1+cx}} + \frac{2 b c^3 d^2 x^{4+m} \sqrt{d - c^2 d x^2}}{(4+m) (6+m) \sqrt{-1+cx} \sqrt{1+cx}} - \frac{b c^5 d^2 x^{6+m} \sqrt{d - c^2 d x^2}}{(6+m)^2 \sqrt{-1+cx} \sqrt{1+cx}} + \frac{15 d^2 x^{1+m} \sqrt{d - c^2 d x^2} \left(a + b \text{ArcCosh}[c x]\right)}{(6+m) \left(8+6m+m^2\right)} + \frac{5 d^2 x^{1+m} (1-cx) (1+cx) \sqrt{d - c^2 d x^2} \left(a + b \text{ArcCosh}[c x]\right)}{(4+m) (6+m)} + \frac{d^2 x^{1+m} (1-cx)^2 (1+cx)^2 \sqrt{d - c^2 d x^2} \left(a + b \text{ArcCosh}[c x]\right)}{6+m} + \left(15 d^2 x^{1+m} \sqrt{1-c^2 x^2} \sqrt{d - c^2 d x^2} \left(a + b \text{ArcCosh}[c x]\right) \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{1+m}{2}, \frac{3+m}{2}, c^2 x^2\right]\right) \Big/ \left((6+m) \left(8+14m+7m^2+m^3\right) (1-cx) (1+cx)\right) - \left(15 b c d^2 x^{2+m} \sqrt{d - c^2 d x^2} \text{HypergeometricPFQ}\left[\left\{1, 1+\frac{m}{2}, 1+\frac{m}{2}\right\}, \left\{\frac{3}{2}+\frac{m}{2}, 2+\frac{m}{2}\right\}, c^2 x^2\right]\right) \Big/ \left((1+m) (2+m)^2 (4+m) (6+m) \sqrt{-1+cx} \sqrt{1+cx}\right)$$

Result (type 8, 29 leaves):

$$\int x^m \left(d - c^2 d x^2\right)^{5/2} \left(a + b \text{ArcCosh}[c x]\right) dx$$

Problem 152: Unable to integrate problem.

$$\int x^m \left(d - c^2 d x^2\right)^{3/2} \left(a + b \text{ArcCosh}[c x]\right) dx$$

Optimal (type 5, 442 leaves, 7 steps):

$$-\frac{3\,b\,c\,d\,x^{2+m}\,\sqrt{d-c^2\,d\,x^2}}{(2+m)^2\,(4+m)\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}}-\frac{b\,c\,d\,x^{2+m}\,\sqrt{d-c^2\,d\,x^2}}{(8+6\,m+m^2)\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}}+$$
$$\frac{b\,c^3\,d\,x^{4+m}\,\sqrt{d-c^2\,d\,x^2}}{(4+m)^2\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}}+\frac{3\,d\,x^{1+m}\,\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcCosh}[c\,x])}{8+6\,m+m^2}+$$
$$\frac{d\,x^{1+m}\,(1-c\,x)\,(1+c\,x)\,\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcCosh}[c\,x])}{4+m}+$$
$$\left(3\,d\,x^{1+m}\,\sqrt{1-c^2\,x^2}\,\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcCosh}[c\,x])\right.$$
$$\left.\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1+m}{2},\frac{3+m}{2},c^2\,x^2\right]\right)\Big/\left((8+14\,m+7\,m^2+m^3)\,(1-c\,x)\,(1+c\,x)\right)-$$
$$\left(3\,b\,c\,d\,x^{2+m}\,\sqrt{d-c^2\,d\,x^2}\,\text{HypergeometricPFQ}\left[\left\{1,1+\frac{m}{2},1+\frac{m}{2}\right\},\left\{\frac{3}{2}+\frac{m}{2},2+\frac{m}{2}\right\},c^2\,x^2\right]\right)\Big/$$
$$\left((1+m)\,(2+m)^2\,(4+m)\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\right)$$

Result (type 8, 29 leaves):

$$\int x^m\,\left(d-c^2\,d\,x^2\right)^{3/2}\,(a+b\,\text{ArcCosh}[c\,x])\,\mathbb{d}x$$

Problem 153: Unable to integrate problem.

$$\int x^m\,\sqrt{d-c^2\,d\,x^2}\,\,(a+b\,\text{ArcCosh}[c\,x])\,\mathbb{d}x$$

Optimal (type 5, 268 leaves, 4 steps):

$$-\frac{b\,c\,x^{2+m}\,\sqrt{d-c^2\,d\,x^2}}{(2+m)^2\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}}+\frac{x^{1+m}\,\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcCosh}[c\,x])}{2+m}+$$
$$\left(x^{1+m}\,\sqrt{1-c^2\,x^2}\,\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcCosh}[c\,x])\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1+m}{2},\frac{3+m}{2},c^2\,x^2\right]\right)\Big/$$
$$\left((2+3\,m+m^2)\,(1-c\,x)\,(1+c\,x)\right)-$$
$$\left(b\,c\,x^{2+m}\,\sqrt{d-c^2\,d\,x^2}\,\text{HypergeometricPFQ}\left[\left\{1,1+\frac{m}{2},1+\frac{m}{2}\right\},\left\{\frac{3}{2}+\frac{m}{2},2+\frac{m}{2}\right\},c^2\,x^2\right]\right)\Big/$$
$$\left((1+m)\,(2+m)^2\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\right)$$

Result (type 8, 29 leaves):

$$\int x^m\,\sqrt{d-c^2\,d\,x^2}\,\,(a+b\,\text{ArcCosh}[c\,x])\,\mathbb{d}x$$

Problem 154: Unable to integrate problem.

$$\int\frac{x^m\,(a+b\,\text{ArcCosh}[c\,x])}{\sqrt{d-c^2\,d\,x^2}}\,\mathbb{d}x$$

Optimal (type 5, 166 leaves, 2 steps):

$$\left(x^{1+m}\sqrt{1-c^2x^2}\,\left(a+b\,\text{ArcCosh}[c\,x]\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1+m}{2},\,\frac{3+m}{2},\,c^2x^2\right]\right)\Big/\left(\left(1+m\right)\sqrt{d-c^2\,d\,x^2}\right)+\left(b\,c\,x^{2+m}\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\text{HypergeometricPFQ}\left[\left\{1,\,1+\frac{m}{2},\,1+\frac{m}{2}\right\},\,\left\{\frac{3}{2}+\frac{m}{2},\,2+\frac{m}{2}\right\},\,c^2x^2\right]\right)\Big/\left(\left(2+3\,m+m^2\right)\sqrt{d-c^2\,d\,x^2}\right)$$

Result (type 9, 198 leaves):

$$\left(2^{-2-m}\,x^{1+m}\left(2^{2+m}\left(a\sqrt{1-c^2x^2}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1+m}{2},\,\frac{3+m}{2},\,c^2x^2\right]+b\left(1-c^2x^2\right)\text{ArcCosh}[c\,x]\,\text{Hypergeometric2F1}\left[1,\,\frac{2+m}{2},\,\frac{3+m}{2},\,c^2x^2\right]\right)+b\,c\,\left(1+m\right)\sqrt{\pi}\,x\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\text{Gamma}[1+m]\,\text{HypergeometricPFQRegularized}\left[\left\{1,\,\frac{2+m}{2},\,\frac{2+m}{2}\right\},\,\left\{\frac{3+m}{2},\,\frac{4+m}{2}\right\},\,c^2x^2\right]\right)\right)\Big/\left(\left(1+m\right)\sqrt{d-c^2\,d\,x^2}\right)$$

Problem 155: Unable to integrate problem.

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

Optimal (type 5, 280 leaves, 4 steps):

$$\frac{x^{1+m}\left(a+b\,\text{ArcCosh}[c\,x]\right)}{d\sqrt{d-c^2\,d\,x^2}}-\left(m\,x^{1+m}\sqrt{1-c^2x^2}\,\left(a+b\,\text{ArcCosh}[c\,x]\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1+m}{2},\,\frac{3+m}{2},\,c^2x^2\right]\right)\Big/\left(d\left(1+m\right)\sqrt{d-c^2\,d\,x^2}\right)+\frac{b\,c\,x^{2+m}\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\text{Hypergeometric2F1}\left[1,\,\frac{2+m}{2},\,\frac{4+m}{2},\,c^2x^2\right]}{d\left(2+m\right)\sqrt{d-c^2\,d\,x^2}}-\left(b\,c\,m\,x^{2+m}\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\text{HypergeometricPFQ}\left[\left\{1,\,1+\frac{m}{2},\,1+\frac{m}{2}\right\},\,\left\{\frac{3}{2}+\frac{m}{2},\,2+\frac{m}{2}\right\},\,c^2x^2\right]\right)\Big/\left(d\left(2+3\,m+m^2\right)\sqrt{d-c^2\,d\,x^2}\right)$$

Result (type 8, 29 leaves):

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

Problem 156: Unable to integrate problem.

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

Optimal (type 5, 435 leaves, 6 steps):

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

$$\left((2-m)\,m\,x^{1+m}\sqrt{1 - c^2\,x^2}\,\left(a + b\,\text{ArcCosh}[c\,x]\right)\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{1+m}{2}, \frac{3+m}{2}, c^2\,x^2\right]\right) \Big/$$

$$\left(3\,d^2\,(1+m)\sqrt{d - c^2\,d\,x^2}\right) +$$

$$\left(b\,c\,(2-m)\,x^{2+m}\sqrt{-1 + c\,x}\,\sqrt{1 + c\,x}\,\text{Hypergeometric2F1}\left[1, \frac{2+m}{2}, \frac{4+m}{2}, c^2\,x^2\right]\right) \Big/$$

$$\left(3\,d^2\,(2+m)\sqrt{d - c^2\,d\,x^2}\right) + \frac{b\,c\,x^{2+m}\sqrt{-1 + c\,x}\,\sqrt{1 + c\,x}\,\text{Hypergeometric2F1}\left[2, \frac{2+m}{2}, \frac{4+m}{2}, c^2\,x^2\right]}{3\,d^2\,(2+m)\sqrt{d - c^2\,d\,x^2}} -$$

$$\left(b\,c\,(2-m)\,m\,x^{2+m}\sqrt{-1 + c\,x}\,\sqrt{1 + c\,x}\,\text{HypergeometricPFQ}\left[\left\{1, 1 + \frac{m}{2}, 1 + \frac{m}{2}\right\},\right.\right.$$

$$\left.\left.\left\{\frac{3}{2} + \frac{m}{2}, 2 + \frac{m}{2}\right\}, c^2\,x^2\right]\right) \Big/ \left(3\,d^2\,(2 + 3\,m + m^2)\sqrt{d - c^2\,d\,x^2}\right)$$

Result (type 8, 29 leaves):

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

Problem 157: Unable to integrate problem.

$$\int \frac{x^m\,\text{ArcCosh}[a\,x]}{\sqrt{1 - a^2\,x^2}}\,dx$$

Optimal (type 5, 131 leaves, 2 steps):

$$\frac{x^{1+m}\,\text{ArcCosh}[a\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{1+m}{2}, \frac{3+m}{2}, a^2\,x^2\right]}{1+m} +$$

$$\left(a\,x^{2+m}\sqrt{-1 + a\,x}\,\sqrt{1 + a\,x}\,\text{HypergeometricPFQ}\left[\left\{1, 1 + \frac{m}{2}, 1 + \frac{m}{2}\right\}, \left\{\frac{3}{2} + \frac{m}{2}, 2 + \frac{m}{2}\right\}, a^2\,x^2\right]\right) \Big/$$

$$\left((2 + 3\,m + m^2)\sqrt{1 - a^2\,x^2}\right)$$

Result (type 9, 163 leaves):

$$-\left(\left(x^{1+m}\sqrt{\frac{-1+a\,x}{1+a\,x}}\,(1+a\,x)\right.\right.$$
$$\left(\frac{1}{1+m}2\sqrt{\frac{-1+a\,x}{1+a\,x}}\,(1+a\,x)\,\text{ArcCosh}[a\,x]\,\text{Hypergeometric2F1}\left[1,\,1+\frac{m}{2},\,\frac{3+m}{2},\,a^2\,x^2\right]-\right.$$
$$2^{-1-m}\,a\,\sqrt{\pi}\,x\,\text{Gamma}[1+m]\,\text{HypergeometricPFQRegularized}\left[\right.$$
$$\left.\left.\left.\left\{1,\,1+\frac{m}{2},\,1+\frac{m}{2}\right\},\,\left\{\frac{3+m}{2},\,2+\frac{m}{2}\right\},\,a^2\,x^2\right]\right)\right)\Big/\left(2\sqrt{-(-1+a\,x)\,(1+a\,x)}\right)\right)$$

Problem 170: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 427 leaves, 13 steps):

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

Result (type 4, 5075 leaves):

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

$$\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{ArcCosh}[c\,x]\,\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right]-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)$$

$$\text{ArcCosh}[c\,x]\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}[c\,x]}\right]+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcCosh}[c\,x]}\right]-$$

$$\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{PolyLog}\left[2,\,i\,e^{-\text{ArcCosh}[c\,x]}\right]\Bigg)\Bigg)\Bigg/\left(\sqrt{-d\,(-1+c\,x)\,(1+c\,x)}\right)+$$

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

$$\frac{1}{2\sqrt{-d\,(-1+c\,x)\,(1+c\,x)}}\,i\,d\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\left(4\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]+\right.$$

$$\text{ArcCosh}[c\,x]^2\,\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right]-\text{ArcCosh}[c\,x]^2\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}[c\,x]}\right]-$$

$$4\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

$$4\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1+i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

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

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

$$4\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]+4\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

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

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

$$2 \text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]^2 \text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]+$$

$$2 \text{Log}\left[-i\left(c x+\sqrt{\frac{-1+c x}{1+c x}}(1+c x)\right)\right]^2 \text{Log}\left[\frac{(1-i)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right]+$$

$$4 i \text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]$$

$$\text{Log}\left[\frac{(1-i)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right]-4 i \text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]$$

$$\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{Log}\left[\frac{(1-i)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right]+$$

$$2 \text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]$$

$$\text{Log}\left[\frac{(1-i)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right]+$$

$$2 \text{Log}\left[i\left(c x+\sqrt{\frac{-1+c x}{1+c x}}(1+c x)\right)\right]^2 \text{Log}\left[(1-i)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]-$$

$$2 \text{Log}\left[i\left(c x+\sqrt{\frac{-1+c x}{1+c x}}(1+c x)\right)\right]^2 \text{Log}\left[\frac{(1+i)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right]-$$

$$4 \text{Log}\left[-i\left(c x+\sqrt{\frac{-1+c x}{1+c x}}(1+c x)\right)\right] \text{Log}\left[\frac{1}{2}\left((1+i)-(1-i)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]$$

$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]-$$

$$4 \text{Log}\left[\frac{1}{2}\left((1+i)-(1-i)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right] \text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]$$

$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]+4 \text{Log}\left[-i\left(c x+\sqrt{\frac{-1+c x}{1+c x}}(1+c x)\right)\right]$$

$$\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right] \text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]+$$

$$4 \text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]$$

$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]+$$

$$2 \text{Log}\left[\frac{1}{2}\left((1+i)-(1-i)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]$$

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

$$4\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

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

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

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

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

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

$$2\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]^2\,\text{Log}\left[\frac{1}{2}\left((1+i)+(1-i)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

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

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

$$4\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\,\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$4\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\,\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$2\,\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2$$

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

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

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

$$\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)+\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-4\,i\,\text{ArcCosh}[c\,x]$$

$$\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]+$$

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

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

$$4\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[1+\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-$$

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

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

$$2\left(\text{Log}\left[1-\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-\text{Log}\left[1+\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]\right)\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcCosh}[c\,x]}\right]-$$

$$2\left(\text{Log}\left[1-\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-\text{Log}\left[1+\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]\right)\text{PolyLog}\left[2,\,i\,e^{-\text{ArcCosh}[c\,x]}\right]+$$

$$2\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$2\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$2\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

$$2\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$4\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]\,\text{PolyLog}\left[2,\,-c\,x-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right]+$$

$$4\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]\,\text{PolyLog}\left[2,\,-c\,x-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right]+$$

$$4\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]\,\text{PolyLog}\left[2,\,-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]-$$

$$4\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]\,\text{PolyLog}\left[2,\,i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]+$$

$$4\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]$$

$$\text{PolyLog}\left[2,\,\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+$$

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]\,\text{PolyLog}\left[2,\,\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+$$

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

$$\text{PolyLog}\left[2,\,\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-$$

$$2\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]\,\text{PolyLog}\left[2,\,\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-$$

$$2\,\text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]}\right]\,\text{PolyLog}\left[2,$$

$$\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-4\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]$$

$$\text{PolyLog}\left[2,\,\left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-$$

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]\,\text{PolyLog}\left[2,\,\left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-$$

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

$$\text{PolyLog}\left[2,\,\left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+$$

$$2\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]\,\text{PolyLog}\left[2,\,\left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+$$

$$2 \text{Log}\left[\frac{(1+i)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

$$4 \text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

$$2 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

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

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$2 \text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$2 \text{Log}\left[\frac{(1+i)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$4 \text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$2 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

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

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

$$2 \text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

$$2 \text{Log}\left[\frac{(1+i)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] - 2\,\text{PolyLog}\left[3,\ -i\,e^{-\text{ArcCosh}[c\,x]}\right] +$$

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

$$4\,\text{PolyLog}\left[3,\,i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]\Bigg)$$

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

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

Optimal (type 4, 642 leaves, 18 steps):

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

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

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

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

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

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

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

$$\frac{3\,i\,b^2\,c^2\,d\,\sqrt{d-c^2\,d\,x^2}\,\text{PolyLog}\left[3,\,-i\,e^{\text{ArcCosh}\left[c\,x\right]}\right]}{\sqrt{-1+c\,x}\,\sqrt{1+c\,x}}-$$

$$\frac{3\,i\,b^2\,c^2\,d\,\sqrt{d-c^2\,d\,x^2}\,\text{PolyLog}\left[3,\,i\,e^{\text{ArcCosh}\left[c\,x\right]}\right]}{\sqrt{-1+c\,x}\,\sqrt{1+c\,x}}$$

Result (type 4, 5484 leaves):

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

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

$$\frac{i\,\text{ArcCosh}[c\,x]\,\left(\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right]-\text{Log}\left[1+i\,e^{-\text{ArcCosh}[c\,x]}\right]\right)}{\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)}+$$

$$\left.\frac{i\,\left(\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcCosh}[c\,x]}\right]-\text{PolyLog}\left[2,\,i\,e^{-\text{ArcCosh}[c\,x]}\right]\right)}{\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)}\right)+$$

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

$$\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{ArcCosh}[c\,x]\,\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right]-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)$$

$$\text{ArcCosh}[c\,x]\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}[c\,x]}\right]+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcCosh}[c\,x]}\right]-$$

$$\left.\left.\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{PolyLog}\left[2,\,i\,e^{-\text{ArcCosh}[c\,x]}\right]\right)\right)\Big/\left(\sqrt{-d\,(-1+c\,x)\,(1+c\,x)}\right)-$$

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

$$\left(i\,\left(\text{ArcCosh}[c\,x]^2\,\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right]-\text{ArcCosh}[c\,x]^2\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}[c\,x]}\right]+2\,\text{ArcCosh}[\right.\right.$$

$$\left.\left.c\,x]\,\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcCosh}[c\,x]}\right]-2\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,\,i\,e^{-\text{ArcCosh}[c\,x]}\right]+2\right.\right.$$

$$\left.\left.\text{PolyLog}\left[3,\,-i\,e^{-\text{ArcCosh}[c\,x]}\right]-2\,\text{PolyLog}\left[3,\,i\,e^{-\text{ArcCosh}[c\,x]}\right]\right)\right)\Big/\left(\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\Bigg)+$$

$$b^2 c^2 d \left(\frac{d \sqrt{\frac{-1+c x}{1+c x}} \left(1+c x\right) \text{ArcCosh}[c x] \left(2+\frac{\sqrt{\frac{-1+c x}{1+c x}} (1+c x) \text{ArcCosh}[c x]}{c x}\right)}{2 c x \sqrt{-d \left(-1+c x\right) \left(1+c x\right)}} + \right.$$

$$\frac{1}{2\sqrt{-d \left(-1+c x\right) \left(1+c x\right)}} i d \sqrt{\frac{-1+c x}{1+c x}} \left(1+c x\right) \left(4 i \text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] + \right.$$

$$\text{ArcCosh}[c x]^2 \text{Log}\left[1 - i e^{-\text{ArcCosh}[c x]}\right] - \text{ArcCosh}[c x]^2 \text{Log}\left[1 + i e^{-\text{ArcCosh}[c x]}\right] -$$

$$4 i \text{ArcCosh}[c x] \text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{Log}\left[1 - i e^{2 i \text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]}\right] +$$

$$4 i \text{ArcCosh}[c x] \text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{Log}\left[1 + i e^{2 i \text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]}\right] +$$

$$2 \text{Log}\left[i \left(c x + \sqrt{\frac{-1+c x}{1+c x}} \left(1+c x\right)\right)\right]^2 \text{Log}\left[\frac{1}{1 - \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right] -$$

$$2 \text{Log}\left[-i \left(c x + \sqrt{\frac{-1+c x}{1+c x}} \left(1+c x\right)\right)\right]^2 \text{Log}\left[-\frac{2}{-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right] -$$

$$4 i \text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{Log}\left[1 - \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]$$

$$\text{Log}\left[-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] + 4 i \text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]$$

$$\text{Log}\left[-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]^2 - 2 \text{Log}\left[-i \left(c x + \sqrt{\frac{-1+c x}{1+c x}} \left(1+c x\right)\right)\right]^2$$

$$\text{Log}\left[\left(\frac{1}{2} + \frac{i}{2}\right) \left(-i + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right] + 2 \text{Log}\left[1 - \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]$$

$$\text{Log}\left[-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{Log}\left[\left(\frac{1}{2} + \frac{i}{2}\right) \left(-i + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right] -$$

$$2 \text{Log}\left[-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]^2 \text{Log}\left[\left(\frac{1}{2} + \frac{i}{2}\right) \left(-i + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right] +$$

$$2 \text{Log}\left[-i \left(c x + \sqrt{\frac{-1+c x}{1+c x}} \left(1+c x\right)\right)\right]^2 \text{Log}\left[\frac{\left(1-i\right) \left(-i + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right] +$$

$$4 i \text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{Log}\left[1 - \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right]$$

$$\left. \text{Log}\left[\frac{\left(1-i\right) \left(-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{i + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right] - 4 i \text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \right.$$

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

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

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

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

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

$$4\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right]\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$4\,\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+4\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right]$$

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

$$4\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

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

$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2-2$$

$$\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2+$$

$$4\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

$$\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+4\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-2$$

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

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

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

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

$$2\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]^2\text{Log}\left[\frac{1}{2}\left((1+i)+(1-i)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

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

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

$$4\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$4\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$2\,\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2$$

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

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

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

$$\text{Log}\left[\frac{1}{2}\left((1+i)+(1-i)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-4\,i\,\text{ArcCosh}[c\,x]$$

$$\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-\frac{i\,(1+c\,x)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]+$$

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

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

$$4\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[1+\frac{i\,(1+c\,x)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-$$

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

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

$$2\left(\text{Log}\left[1-\frac{i\,(1+c\,x)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-\text{Log}\left[1+\frac{i\,(1+c\,x)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]\right)\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcCosh}[c\,x]}\right]-$$

$$2\left(\text{Log}\left[1-\frac{i\,(1+c\,x)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-\text{Log}\left[1+\frac{i\,(1+c\,x)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]\right)\text{PolyLog}\left[2,\,i\,e^{-\text{ArcCosh}[c\,x]}\right]+$$

$$2\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\,\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$2\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\,\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$2\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\,\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

$$2\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\,\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$4\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\,\text{PolyLog}\left[2,\,-c\,x-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right]+$$

$$4\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\,\text{PolyLog}\left[2,\,-c\,x-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right]+$$

$$4\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\,\text{PolyLog}\left[2,\,-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]-$$

$$4 \text{Log}\left[\text{i}\left(c x+\sqrt{\frac{-1+c x}{1+c x}}\ (1+c x)\right)\right] \text{PolyLog}\left[2, \text{i}\left(c x+\sqrt{\frac{-1+c x}{1+c x}}\ (1+c x)\right)\right]+4 \text{Log}\left[\right.$$

$$\left.-\text{i}\left(c x+\sqrt{\frac{-1+c x}{1+c x}}\ (1+c x)\right)\right] \text{PolyLog}\left[2, \left(-\frac{1}{2}-\frac{\text{i}}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]+$$

$$2 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right] \text{PolyLog}\left[2, \left(-\frac{1}{2}-\frac{\text{i}}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]+$$

$$2 \text{Log}\left[\frac{(1-\text{i})\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)}{\text{i}+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]}\right]$$

$$\text{PolyLog}\left[2, \left(-\frac{1}{2}-\frac{\text{i}}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]-$$

$$2 \text{Log}\left[1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right] \text{PolyLog}\left[2, \left(-\frac{1}{2}-\frac{\text{i}}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]-$$

$$2 \text{Log}\left[\frac{(1+\text{i})\left(1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)}{\text{i}+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]}\right] \text{PolyLog}\left[2,\right.$$

$$\left.\left(-\frac{1}{2}-\frac{\text{i}}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]-4 \text{Log}\left[\text{i}\left(c x+\sqrt{\frac{-1+c x}{1+c x}}\ (1+c x)\right)\right]$$

$$\text{PolyLog}\left[2, \left(-\frac{1}{2}+\frac{\text{i}}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]-$$

$$2 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right] \text{PolyLog}\left[2, \left(-\frac{1}{2}+\frac{\text{i}}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]-$$

$$2 \text{Log}\left[\frac{(1-\text{i})\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)}{\text{i}+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]}\right]$$

$$\text{PolyLog}\left[2, \left(-\frac{1}{2}+\frac{\text{i}}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]+$$

$$2 \text{Log}\left[1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right] \text{PolyLog}\left[2, \left(-\frac{1}{2}+\frac{\text{i}}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]+$$

$$2 \text{Log}\left[\frac{(1+\text{i})\left(1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)}{\text{i}+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]}\right]$$

$$\text{PolyLog}\left[2, \left(-\frac{1}{2}+\frac{\text{i}}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]-$$

$$4 \text{Log}\left[-\text{i}\left(c x+\sqrt{\frac{-1+c x}{1+c x}}\ (1+c x)\right)\right] \text{PolyLog}\left[2, \left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]-$$

$$2 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right] \text{PolyLog}\left[2, \left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]\right)\right]-$$

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

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+$$

$$2\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+$$

$$2\,\text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+$$

$$4\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+$$

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+$$

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

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-$$

$$2\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-$$

$$2\,\text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-2\,\text{PolyLog}\left[3,\ -i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]+$$

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

$$4\,\text{PolyLog}\left[3,\ i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right]\Bigg)$$

Problem 186: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 921 leaves, 27 steps):

$$-\frac{170}{27} b^2 c^2 d^2 \sqrt{d - c^2 d x^2} + \frac{5}{27} b^2 c^4 d^2 x^2 \sqrt{d - c^2 d x^2} +$$
$$\frac{5 a b c^3 d^2 x \sqrt{d - c^2 d x^2}}{\sqrt{-1 + c x} \sqrt{1 + c x}} + \frac{5 b^2 c^2 d^2 (1 - c^2 x^2) \sqrt{d - c^2 d x^2}}{3 (1 - c x) (1 + c x)} +$$
$$\frac{b^2 c^2 d^2 (1 - c^2 x^2)^2 \sqrt{d - c^2 d x^2}}{9 (1 - c x) (1 + c x)} + \frac{5 b^2 c^3 d^2 x \sqrt{d - c^2 d x^2} \text{ ArcCosh}[c x]}{\sqrt{-1 + c x} \sqrt{1 + c x}} -$$
$$\frac{b c d^2 \sqrt{d - c^2 d x^2} (a + b \text{ ArcCosh}[c x])}{x \sqrt{-1 + c x} \sqrt{1 + c x}} - \frac{b c^3 d^2 x \sqrt{d - c^2 d x^2} (a + b \text{ ArcCosh}[c x])}{3 \sqrt{-1 + c x} \sqrt{1 + c x}} -$$
$$\frac{2 b c^5 d^2 x^3 \sqrt{d - c^2 d x^2} (a + b \text{ ArcCosh}[c x])}{9 \sqrt{-1 + c x} \sqrt{1 + c x}} - \frac{5}{2} c^2 d^2 \sqrt{d - c^2 d x^2} (a + b \text{ ArcCosh}[c x])^2 -$$
$$\frac{5}{6} c^2 d^2 (1 - c x) (1 + c x) \sqrt{d - c^2 d x^2} (a + b \text{ ArcCosh}[c x])^2 -$$
$$\frac{d^2 (1 - c x)^2 (1 + c x)^2 \sqrt{d - c^2 d x^2} (a + b \text{ ArcCosh}[c x])^2}{2 x^2} +$$
$$\frac{5 c^2 d^2 \sqrt{d - c^2 d x^2} (a + b \text{ ArcCosh}[c x])^2 \text{ ArcTan}\left[e^{\text{ArcCosh}[c x]}\right]}{\sqrt{-1 + c x} \sqrt{1 + c x}} -$$
$$\frac{b^2 c^2 d^2 \sqrt{-1 + c^2 x^2} \sqrt{d - c^2 d x^2} \text{ ArcTan}\left[\sqrt{-1 + c^2 x^2}\right]}{(1 - c x) (1 + c x)} -$$
$$\left(5 i b c^2 d^2 \sqrt{d - c^2 d x^2} (a + b \text{ ArcCosh}[c x]) \text{ PolyLog}\left[2, -i e^{\text{ArcCosh}[c x]}\right]\right) \Big/ \left(\sqrt{-1 + c x} \sqrt{1 + c x}\right) +$$
$$\frac{5 i b c^2 d^2 \sqrt{d - c^2 d x^2} (a + b \text{ ArcCosh}[c x]) \text{ PolyLog}\left[2, i e^{\text{ArcCosh}[c x]}\right]}{\sqrt{-1 + c x} \sqrt{1 + c x}} +$$
$$\frac{5 i b^2 c^2 d^2 \sqrt{d - c^2 d x^2} \text{ PolyLog}\left[3, -i e^{\text{ArcCosh}[c x]}\right]}{\sqrt{-1 + c x} \sqrt{1 + c x}} -$$
$$\frac{5 i b^2 c^2 d^2 \sqrt{d - c^2 d x^2} \text{ PolyLog}\left[3, i e^{\text{ArcCosh}[c x]}\right]}{\sqrt{-1 + c x} \sqrt{1 + c x}}$$

Result (type 4, 5734 leaves):

$$\sqrt{-d (-1 + c^2 x^2)} \left(-\frac{7}{3} a^2 c^2 d^2 - \frac{a^2 d^2}{2 x^2} + \frac{1}{3} a^2 c^4 d^2 x^2\right) - \left(a b c^2 d^2 \sqrt{-d (-1 + c x) (1 + c x)}\right.$$
$$\left.\left(-9 c x - 12 \left(\frac{-1 + c x}{1 + c x}\right)^{3/2} (1 + c x)^3 \text{ ArcCosh}[c x] + \text{Cosh}[3 \text{ ArcCosh}[c x]]\right)\right) \Big/$$
$$\left(18 \sqrt{\frac{-1 + c x}{1 + c x}} (1 + c x)\right) + \frac{1}{54} b^2 c^2 d^2 \sqrt{-d (-1 + c x) (1 + c x)}$$

$$\left(-26+\frac{27\,c\,x\,\text{ArcCosh}[c\,x]}{\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)}-9\,\text{ArcCosh}[c\,x]^2+\left(2+9\,\text{ArcCosh}[c\,x]^2\right)\text{Cosh}[2\,\text{ArcCosh}[c\,x]]-\frac{3\,\text{ArcCosh}[c\,x]\,\text{Cosh}[3\,\text{ArcCosh}[c\,x]]}{\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)}\right)-$$

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

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

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

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

$$\left(i\,\left(\text{ArcCosh}[c\,x]^2\,\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right]-\text{ArcCosh}[c\,x]^2\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}[c\,x]}\right]+2\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,-i\,e^{-\text{ArcCosh}[c\,x]}\right]-2\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,i\,e^{-\text{ArcCosh}[c\,x]}\right]+2\,\text{PolyLog}\left[3,-i\,e^{-\text{ArcCosh}[c\,x]}\right]-2\,\text{PolyLog}\left[3,i\,e^{-\text{ArcCosh}[c\,x]}\right]\right)\right)\Big/\left(\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)+$$

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

$$\frac{1}{2\,\sqrt{-d\,\left(-1+c\,x\right)\,\left(1+c\,x\right)}}\,i\,d\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\left(4\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}[c\,x]\right]\right]+\right.$$

$$\text{ArcCosh}[c\,x]^2\,\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right]-\text{ArcCosh}[c\,x]^2\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}[c\,x]}\right]-$$

$$4\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}[c\,x]\right]\right]\,\text{Log}\left[1-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

$$4\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}[c\,x]\right]\right]\,\text{Log}\left[1+i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

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

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

$$4\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}[c\,x]\right]\right]\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}[c\,x]\right]\right]+4\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}[c\,x]\right]\right]$$

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

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

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

$$2\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]^2\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

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

$$4\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[\frac{(1-i)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]-4\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

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

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

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

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

$$4\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{Log}\left[\frac{1}{2}\left((1+i)-(1-i)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$4\,\text{Log}\left[\frac{1}{2}\left((1+i)-(1-i)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+4\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]$$

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

$$4\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

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

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

$$4\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

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

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

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

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

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

$$2\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]^2\text{Log}\left[\frac{1}{2}\left((1+i)+(1-i)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

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

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

$$4\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$4\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$2\,\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2$$

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

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

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

$$\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)+\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-4\,i\,\text{ArcCosh}[c\,x]$$

$$\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{Log}\left[1-\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]+$$

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

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

$$4\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[1+\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-$$

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

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

$$2\left(\text{Log}\left[1-\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-\text{Log}\left[1+\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]\right)\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcCosh}[c\,x]}\right]-$$

$$2\left(\text{Log}\left[1-\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-\text{Log}\left[1+\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]\right)\text{PolyLog}\left[2,\,i\,e^{-\text{ArcCosh}[c\,x]}\right]+$$

$$2\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$2\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$2\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$2\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

$$2 \text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ i\, e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right] -$$

$$4 \text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right] \text{PolyLog}\left[2,\ -c\,x-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right] +$$

$$4 \text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right] \text{PolyLog}\left[2,\ -c\,x-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right] +$$

$$4 \text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right] \text{PolyLog}\left[2,\ -i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right] -$$

$$4 \text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right] \text{PolyLog}\left[2,\ i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right] + 4 \text{Log}\left[$$

$$-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right] \text{PolyLog}\left[2,\ \left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$2 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

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

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

$$2 \text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

$$2 \text{Log}\left[\frac{(1+i)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right] \text{PolyLog}\left[2,\right.$$

$$\left.\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] - 4 \text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]$$

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

$$2 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

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

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$2 \text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$2 \text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

$$4 \text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

$$2 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

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

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$2 \text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$2 \text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$4 \text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$2 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

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

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

$$2 \text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] -$$

$$2 \text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] - 2 \text{PolyLog}\left[3,\ -i\,e^{-\text{ArcCosh}[c\,x]}\right] +$$

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

$$4\,\text{PolyLog}\left[3,\,i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]\Bigg)$$

Problem 196: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 53 leaves, 2 steps):

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

Result (type 3, 147 leaves):

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

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

Problem 199: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 438 leaves, 13 steps):

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

Result (type 4, 5161 leaves):

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

$$\frac{1}{2}\left(\left(2\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\,\left(-2+\text{ArcCosh}\left[c\,x\right]^2\right)\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]\right)\Big/\left(\sqrt{-d\,\left(-1+c\,x\right)\,\left(1+c\,x\right)}\right)-\left(2\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\,\text{ArcCosh}\left[c\,x\right]\left(2\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]\,\left(\text{Log}\left[1-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]}\right]-\text{Log}\left[1+i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]}\right]\right)+i\,\left(\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]}\right]-\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]}\right]\right)\right)\right)\Big/\left(\sqrt{-d\,\left(-1+c\,x\right)\,\left(1+c\,x\right)}\right)+2\left(\frac{1}{2\sqrt{-d\,\left(-1+c\,x\right)\,\left(1+c\,x\right)}}\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\left(-2\,\text{ArcCosh}\left[c\,x\right]^2\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]-i\,\text{ArcCosh}\left[c\,x\right]^2\,\text{Log}\left[1-i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]+i\,\text{ArcCosh}\left[c\,x\right]^2\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]-4\,\text{ArcCosh}\left[c\,x\right]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]\,\text{Log}\left[1-\frac{i\,\left(1+c\,x\right)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]-2\,i\,\text{ArcCosh}\left[c\,x\right]\,\text{Log}\left[1-i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]\,\text{Log}\left[1-\frac{i\,\left(1+c\,x\right)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]+2\,i\,\text{ArcCosh}\left[c\,x\right]\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]\,\text{Log}\left[1-\frac{i\,\left(1+c\,x\right)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]+4\,\text{ArcCosh}\left[c\,x\right]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]\,\text{Log}\left[1+\frac{i\,\left(1+c\,x\right)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]+2\,i\,\text{ArcCosh}\left[c\,x\right]\,\text{Log}\left[1-i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]\,\text{Log}\left[1+\frac{i\,\left(1+c\,x\right)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]-2\,i\,\text{ArcCosh}\left[c\,x\right]\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]\,\text{Log}\left[1+\frac{i\,\left(1+c\,x\right)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]-2\,i\left(\text{Log}\left[1-\frac{i\,\left(1+c\,x\right)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]-\text{Log}\left[1+\frac{i\,\left(1+c\,x\right)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]\right)\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]+$$

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

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

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

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

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

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

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

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

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

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

$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2-\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2+$$

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

$$2\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2+$$

$$2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]+2\,\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[\frac{\left(1-i\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]+\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-2\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]+\text{Log}\left[\frac{\left(1-i\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]+2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]-\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]+\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[$$

$$1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\Big]\,\text{Log}\left[\frac{\left(1+i\right)\,\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]-$$

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

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

$$\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\,\text{Log}\left[\frac{1}{2}\,\left(\left(1+i\right)+\left(1-i\right)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]^2$$

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

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

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

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

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

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

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

$$\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2\,\text{Log}\left[\frac{1}{2}\,\left(\left(1+i\right)+\left(1-i\right)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\,\text{Log}\left[\frac{1}{2}\,\left(\left(1+i\right)+\left(1-i\right)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

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

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

$$\left(\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\right)\,\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+\left(-\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]+\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\right)\,\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

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

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

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

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

$$2\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]\,\text{PolyLog}\left[2,\right.$$

$$\left.\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]$$

$$\text{PolyLog}\left[2,\,\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+$$

$$\text{Log}\left[\frac{\left(1-i\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]}\right]\,\text{PolyLog}\left[2,\right.$$

$$\left.\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]$$

$$\text{PolyLog}\left[2,\,\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-$$

$$\text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]}\right]\,\text{PolyLog}\left[2,\,\left(-\frac{1}{2}-\frac{i}{2}\right)\right.$$

$$\left.\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-2\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]\,\text{PolyLog}\left[\right.$$

$$\left.2,\,\left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]$$

$$\text{PolyLog}\left[2,\,\left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-$$

$$\text{Log}\left[\frac{\left(1-i\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]}\right]\,\text{PolyLog}\left[2,\right.$$

$$\left.\left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right]$$

$$\text{PolyLog}\left[2,\,\left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+$$

$$\text{Log}\left[\frac{(1+i)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]\text{PolyLog}\left[2,\left(-\frac{1}{2}+\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-2\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{PolyLog}\left[2,\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-\text{Log}\left[\frac{(1-i)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]\text{PolyLog}\left[2,\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+\text{Log}\left[\frac{(1+i)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]\text{PolyLog}\left[2,\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+2\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{PolyLog}\left[2,\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+\text{Log}\left[\frac{(1-i)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]\text{PolyLog}\left[2,\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-\text{Log}\left[\frac{(1+i)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]\text{PolyLog}\left[2,\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-2\,\text{PolyLog}\left[3,-i\right.$$

$$\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\Big]+2\,\text{PolyLog}\left[3,\,i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\Big)\Big)\Big)\Big)\Bigg)$$

Problem 209: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 650 leaves, 26 steps):

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

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

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

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

$$\frac{2\,b^2\,c^2\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\text{PolyLog}\left[2,\,-e^{\text{ArcCosh}[c\,x]}\right]}{d\,\sqrt{d-c^2\,d\,x^2}}-\frac{1}{d\,\sqrt{d-c^2\,d\,x^2}}$$

$$3\,i\,b\,c^2\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\left(a+b\,\text{ArcCosh}[c\,x]\right)\,\text{PolyLog}\left[2,\,-i\,e^{\text{ArcCosh}[c\,x]}\right]+$$

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

$$\frac{2\,b^2\,c^2\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\text{PolyLog}\left[2,\,e^{\text{ArcCosh}[c\,x]}\right]}{d\,\sqrt{d-c^2\,d\,x^2}}+$$

$$\frac{3\,i\,b^2\,c^2\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\text{PolyLog}\left[3,\,-i\,e^{\text{ArcCosh}[c\,x]}\right]}{d\,\sqrt{d-c^2\,d\,x^2}}-$$

$$\frac{3\,i\,b^2\,c^2\,\sqrt{-1+c\,x}\,\sqrt{1+c\,x}\,\text{PolyLog}\left[3,\,i\,e^{\text{ArcCosh}[c\,x]}\right]}{d\,\sqrt{d-c^2\,d\,x^2}}$$

Result (type 4, 5400 leaves):

$$\sqrt{-d\left(-1+c^2\,x^2\right)}\left(-\frac{a^2}{2\,d^2\,x^2}-\frac{a^2\,c^2}{d^2\left(-1+c^2\,x^2\right)}\right)+$$

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

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

$$3\,\text{ArcCosh}[c\,x]^2 \text{Log}\left[1 - i\,e^{-\text{ArcCosh}[c\,x]}\right] - 3\,\text{ArcCosh}[c\,x]^2 \text{Log}\left[1 + i\,e^{-\text{ArcCosh}[c\,x]}\right] -$$

$$12\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{Log}\left[1 - i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right] +$$

$$12\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{Log}\left[1 + i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right] +$$

$$6\,\text{Log}\left[i\left(c\,x + \sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]^2 \text{Log}\left[\frac{1}{1 - \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right] -$$

$$6\,\text{Log}\left[-i\left(c\,x + \sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]^2 \text{Log}\left[-\frac{2}{-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right] -$$

$$12\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{Log}\left[1 - \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] + 12\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]^2 - 6\,\text{Log}\left[-i\left(c\,x + \sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]^2$$

$$\text{Log}\left[\left(\frac{1}{2} + \frac{i}{2}\right)\left(-i + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] + 6\,\text{Log}\left[1 - \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

$$6\,\text{Log}\left[-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]^2 \text{Log}\left[\left(\frac{1}{2} + \frac{i}{2}\right)\left(-i + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right] +$$

$$6\,\text{Log}\left[-i\left(c\,x + \sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]^2 \text{Log}\left[\frac{(1-i)\left(-i + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right] +$$

$$12\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{Log}\left[1 - \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[\frac{(1-i)\left(-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right] - 12\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

$$6\,\text{Log}\left[-1 + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] \text{Log}\left[\left(\frac{1}{2} + \frac{i}{2}\right)\left(-i + \text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$6\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right]^2\text{Log}\left[\left(1-i\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

$$6\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right]^2\text{Log}\left[\frac{\left(1+i\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]-$$

$$12\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right]\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$
$$12\,\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

$$12\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+12\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[$$
$$\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$
$$6\,\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2-6\,\text{Log}\left[$$
$$\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2+$$

$$12\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\left(1+c\,x\right)\right)\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$
$$12\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-6\,\text{Log}\left[$$
$$\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2+$$
$$12\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-6\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

$$12\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]+12\,\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

$$\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-$$

$$6\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

$$\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-6\,\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$6\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

$$\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-12\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

$$6\,\text{Log}\left[\frac{\left(1-i\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

$$\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-12\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

$$12\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]-6\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

$$6\,\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$6\,\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[\frac{(1+i)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]-6\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

$$6\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]^2\text{Log}\left[\frac{1}{2}\left((1+i)+(1-i)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

$$6\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\frac{(1-i)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

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

$$12\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$12\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$6\,\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2$$

$$\text{Log}\left[\frac{1}{2}\left((1+i)+(1-i)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+6\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

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

$$6\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\frac{(1+i)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

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

$$12\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[1-\frac{i\,(1+c\,x)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]+6\,\text{ArcCosh}[c\,x]$$

$$\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right]\text{Log}\left[1-\frac{i\,(1+c\,x)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-6$$

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

$$12\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[1+\frac{i\,(1+c\,x)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-6\,\text{ArcCosh}[c\,x]$$

$$\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right]\text{Log}\left[1+\frac{i\,(1+c\,x)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]+6$$

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

$$6\left(\text{Log}\left[1-\frac{i\,(1+c\,x)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-\text{Log}\left[1+\frac{i\,(1+c\,x)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]\right)\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcCosh}[c\,x]}\right]-$$

$$6\left(\text{Log}\left[1-\frac{i\,(1+c\,x)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]-\text{Log}\left[1+\frac{i\,(1+c\,x)\,\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)^2}{2\,c\,x}\right]\right)\text{PolyLog}\left[2,\,i\,e^{-\text{ArcCosh}[c\,x]}\right]+$$

$$6\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

$$6\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$6\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$6\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$6\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$

$$6\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$

$$12\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{PolyLog}\left[2,\,-c\,x-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right]+$$

$$12\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{PolyLog}\left[2,\,-c\,x-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right]+$$

$$12\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{PolyLog}\left[2,\,-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]-$$

$$12\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{PolyLog}\left[2,\,i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]+$$

$$12 \text{Log}\left[-i \left(c x+\sqrt{\frac{-1+c x}{1+c x}}\ (1+c x)\right)\right]$$

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}-\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]+$$

$$6 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{PolyLog}\left[2,\ \left(-\frac{1}{2}-\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]+$$

$$6 \text{Log}\left[\frac{(1-i)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}-\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]-$$

$$6 \text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{PolyLog}\left[2,\ \left(-\frac{1}{2}-\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]-$$

$$6 \text{Log}\left[\frac{(1+i)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right] \text{PolyLog}\left[2,\right.$$

$$\left.\left(-\frac{1}{2}-\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]-12 \text{Log}\left[i \left(c x+\sqrt{\frac{-1+c x}{1+c x}}\ (1+c x)\right)\right]$$

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]-$$

$$6 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]-$$

$$6 \text{Log}\left[\frac{(1-i)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]+$$

$$6 \text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]+$$

$$6 \text{Log}\left[\frac{(1+i)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]-12$$

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

$$6 \text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right] \text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)\right]-$$

$$6 \text{Log}\left[\frac{(1-i)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

$$6\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

$$6\,\text{Log}\left[\frac{(1+i)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

$$12\,\text{Log}\left[i\ \left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\ (1+c\,x)\right)\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

$$6\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

$$6\,\text{Log}\left[\frac{(1-i)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

$$6\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

$$6\,\text{Log}\left[\frac{(1+i)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-6\,\text{PolyLog}\left[3,\ -i\ e^{-\text{ArcCosh}[c\,x]}\right]+$$

$$6\,\text{PolyLog}\left[3,\ i\ e^{-\text{ArcCosh}[c\,x]}\right]-12\,\text{PolyLog}\left[3,\ -i\ \left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\ (1+c\,x)\right)\right]+$$

$$12\,\text{PolyLog}\left[3,\ i\ \left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\ (1+c\,x)\right)\right]+$$

$$\frac{1}{2\sqrt{-d\ (-1+c\,x)\ (1+c\,x)}}\left(4\sqrt{\frac{-1+c\,x}{1+c\,x}}\ (1+c\,x)\ \text{PolyLog}\left[2,\ -e^{-\text{ArcCosh}[c\,x]}\right]-\right.$$

$$\left.4\sqrt{\frac{-1+c\,x}{1+c\,x}}\ (1+c\,x)\ \text{PolyLog}\left[2,\ e^{-\text{ArcCosh}[c\,x]}\right]-\right.$$

$$\text{ArcCosh}[c\,x]\left(\frac{2\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)}{c\,x}+\frac{(-1+c\,x)\,(1+c\,x)\,\text{ArcCosh}[c\,x]}{c^2\,x^2}+2\,\text{ArcCosh}[c\,x]\right.$$

$$\text{Cosh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]^2-4\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{Log}\left[1-e^{-\text{ArcCosh}[c\,x]}\right]+4\sqrt{\frac{-1+c\,x}{1+c\,x}}$$

$$\left.\left.(1+c\,x)\,\text{Log}\left[1+e^{-\text{ArcCosh}[c\,x]}\right]-2\,\text{ArcCosh}[c\,x]\,\text{Sinh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]^2\right)\right)-$$

$$\frac{1}{d\sqrt{-d\,(-1+c\,x)\,(1+c\,x)}}\,a\,b\,c^2\left(-\frac{\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)}{c\,x}-\right.$$

$$\frac{(-1+c\,x)\,(1+c\,x)\,\text{ArcCosh}[c\,x]}{c^2\,x^2}-$$

$$2\,\text{ArcCosh}[c\,x]\,\text{Cosh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]^2+3\,i\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{ArcCosh}[c\,x]\,\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right]-3\,i\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{ArcCosh}[c\,x]\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}[c\,x]}\right]-$$

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

$$2\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)$$

$$\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] +$$

$$3\,i\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcCosh}[c\,x]}\right] -$$

$$3\,i\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)$$

$$\text{PolyLog}\left[2,\,i\,e^{-\text{ArcCosh}[c\,x]}\right] +$$

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

Problem 219: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 826 leaves, 39 steps):

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

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

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

$$\frac{5 c^2 \sqrt{-1+c x}\ \sqrt{1+c x}\ \left(a+b \text{ArcCosh}[c x]\right)^2 \text{ArcTan}\left[e^{\text{ArcCosh}[c x]}\right]}{d^2 \sqrt{d-c^2 d x^2}}-$$

$$\frac{b^2 c^2 \sqrt{-1+c x}\ \sqrt{1+c x}\ \text{ArcTan}\left[\sqrt{-1+c x}\ \sqrt{1+c x}\right]}{d^2 \sqrt{d-c^2 d x^2}}+$$

$$\frac{26 b c^2 \sqrt{-1+c x}\ \sqrt{1+c x}\ \left(a+b \text{ArcCosh}[c x]\right) \text{ArcTanh}\left[e^{\text{ArcCosh}[c x]}\right]}{3 d^2 \sqrt{d-c^2 d x^2}}+$$

$$\frac{13 b^2 c^2 \sqrt{-1+c x}\ \sqrt{1+c x}\ \text{PolyLog}\left[2,-e^{\text{ArcCosh}[c x]}\right]}{3 d^2 \sqrt{d-c^2 d x^2}}-\frac{1}{d^2 \sqrt{d-c^2 d x^2}}$$

$$5 i b c^2 \sqrt{-1+c x}\ \sqrt{1+c x}\ \left(a+b \text{ArcCosh}[c x]\right) \text{PolyLog}\left[2,-i e^{\text{ArcCosh}[c x]}\right]+$$

$$\frac{1}{d^2 \sqrt{d-c^2 d x^2}} 5 i b c^2 \sqrt{-1+c x}\ \sqrt{1+c x}\ \left(a+b \text{ArcCosh}[c x]\right) \text{PolyLog}\left[2, i e^{\text{ArcCosh}[c x]}\right]-$$

$$\frac{13 b^2 c^2 \sqrt{-1+c x}\ \sqrt{1+c x}\ \text{PolyLog}\left[2, e^{\text{ArcCosh}[c x]}\right]}{3 d^2 \sqrt{d-c^2 d x^2}}+$$

$$\frac{5 i b^2 c^2 \sqrt{-1+c x}\ \sqrt{1+c x}\ \text{PolyLog}\left[3,-i e^{\text{ArcCosh}[c x]}\right]}{d^2 \sqrt{d-c^2 d x^2}}-$$

$$\frac{5 i b^2 c^2 \sqrt{-1+c x}\ \sqrt{1+c x}\ \text{PolyLog}\left[3, i e^{\text{ArcCosh}[c x]}\right]}{d^2 \sqrt{d-c^2 d x^2}}$$

Result (type 4, 5568 leaves) :

$$\sqrt{-d\left(-1+c^2 x^2\right)}\left(-\frac{a^2}{2 d^3 x^2}+\frac{a^2 c^2}{3 d^3 \left(-1+c^2 x^2\right)^2}-\frac{2 a^2 c^2}{d^3 \left(-1+c^2 x^2\right)}\right)+$$

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

$$\frac{1}{6 d^2 \sqrt{-d (-1+c x) (1+c x)}} a b c^2 \left(\frac{6 \sqrt{\frac{-1+c x}{1+c x}}\ (1+c x)}{c x}+\frac{6 (-1+c x) (1+c x) \text{ArcCosh}[c x]}{c^2 x^2}+\right.$$

$$\left.26 \text{ArcCosh}[c x] \text{Cosh}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]^2-\text{Coth}\left[\frac{1}{2} \text{ArcCosh}[c x]\right]-\right.$$

$$\text{ArcCosh}[c\,x]\,\text{Coth}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]^2 - 30\,i\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{ArcCosh}[c\,x]$$

$$\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right] + 30\,i\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{ArcCosh}[c\,x]\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}[c\,x]}\right] +$$

$$26\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{Log}\left[\text{Cosh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] - 26\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)$$

$$\text{Log}\left[\text{Sinh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] - 30\,i\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcCosh}[c\,x]}\right] +$$

$$30\,i\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\,\text{PolyLog}\left[2,\,i\,e^{-\text{ArcCosh}[c\,x]}\right] - 26\,\text{ArcCosh}[c\,x]\,\text{Sinh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]^2 -$$

$$\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right] - \text{ArcCosh}[c\,x]\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]^2 + \frac{1}{d^2}$$

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

$$5\,\text{ArcCosh}[c\,x]^2\,\text{Log}\left[1-i\,e^{-\text{ArcCosh}[c\,x]}\right] - 5\,\text{ArcCosh}[c\,x]^2\,\text{Log}\left[1+i\,e^{-\text{ArcCosh}[c\,x]}\right] -$$

$$20\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right] +$$

$$20\,i\,\text{ArcCosh}[c\,x]\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1+i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right] +$$

$$10\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]^2\text{Log}\left[\frac{1}{1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right] -$$

$$10\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]^2\text{Log}\left[-\frac{2}{-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right] -$$

$$20\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right] + 20\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$

$$\left.\left.\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]^2 - 10\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]^2\right.\right.$$

$$\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+10\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$
$$\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$
$$10\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]^2\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$
$$10\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]^2\text{Log}\left[\frac{(1-i)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]+$$
$$20\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$
$$\text{Log}\left[\frac{(1-i)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]-20\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$
$$\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\frac{(1-i)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]+$$
$$10\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\frac{(1-i)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]+$$
$$10\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]^2\text{Log}\left[(1-i)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$
$$10\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]^2\text{Log}\left[\frac{(1+i)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]-20$$
$$\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{Log}\left[\frac{1}{2}\left((1+i)-(1-i)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$
$$20\,\text{Log}\left[\frac{1}{2}\left((1+i)-(1-i)\,\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$
$$20\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+20\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\right.$$

$$\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\Big]\,\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$
$$10\,\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2-10\,\text{Log}\Big[$$
$$\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\Big]\,\text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2+$$
$$20\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$
$$20\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-10\,\text{Log}\Big[$$
$$\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\Big]\,\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]^2+$$
$$20\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$
$$\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-10\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$
$$\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-$$
$$20\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$
$$\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]+20\,\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-$$
$$10\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-10\,\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)-\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[\frac{\left(1-i\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]+$$
$$10\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]$$
$$\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]-20\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]$$
$$\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]+$$

$$10 \operatorname{Log}\left[\frac{(1-i)\left(-1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)}{i+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]}\right]$$

$$\operatorname{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)\right]\operatorname{Log}\left[1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]-$$

$$20\,i\,\operatorname{ArcTan}\left[\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]\operatorname{Log}\left[1-\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]$$

$$\operatorname{Log}\left[\frac{(1+i)\left(1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)}{i+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]}\right]+20\,i\,\operatorname{ArcTan}\left[\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]$$

$$\operatorname{Log}\left[-1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]\operatorname{Log}\left[\frac{(1+i)\left(1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)}{i+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]}\right]-$$

$$10 \operatorname{Log}\left[-1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]\operatorname{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)\right]$$

$$\operatorname{Log}\left[\frac{(1+i)\left(1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)}{i+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]}\right]+$$

$$10 \operatorname{Log}\left[\frac{1}{2}\left((1+i)-(1-i)\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)\right]$$

$$\operatorname{Log}\left[1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]\operatorname{Log}\left[\frac{(1+i)\left(1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)}{i+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]}\right]-$$

$$10 \operatorname{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)\right]\operatorname{Log}\left[1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]$$

$$\operatorname{Log}\left[\frac{(1+i)\left(1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)}{i+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]}\right]-10 \operatorname{Log}\left[1-\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]$$

$$\operatorname{Log}\left[-1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]\operatorname{Log}\left[\frac{1}{2}\left((1+i)+(1-i)\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)\right]+$$

$$10 \operatorname{Log}\left[-1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]^2\operatorname{Log}\left[\frac{1}{2}\left((1+i)+(1-i)\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)\right]-$$

$$10 \operatorname{Log}\left[-1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]\operatorname{Log}\left[\frac{(1-i)\left(-1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)}{i+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]}\right]$$

$$\operatorname{Log}\left[\frac{1}{2}\left((1+i)+(1-i)\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)\right]-$$

$$20 \operatorname{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\operatorname{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)\right]$$

$$\operatorname{Log}\left[\frac{1}{2}\left((1+i)+(1-i)\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)\right]-$$

$$20 \operatorname{Log}\left[-1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right]\operatorname{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\operatorname{Tanh}\left[\frac{1}{2}\operatorname{ArcCosh}[c\,x]\right]\right)\right]$$

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

$$10\,\text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)\right]^2$$

$$\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)+\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)\right]+10\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right]$$

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

$$10\,\text{Log}\left[-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right]\text{Log}\left[\frac{\left(1+i\right)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]}\right]$$

$$\text{Log}\left[\frac{1}{2}\left(\left(1+i\right)+\left(1-i\right)\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-20\,i\,\text{ArcCosh}\left[c\,x\right]$$

$$\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right]\text{Log}\left[1-\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]+$$

$$10\,\text{ArcCosh}\left[c\,x\right]\text{Log}\left[1-i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]$$

$$\text{Log}\left[1-\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]-10\,\text{ArcCosh}\left[c\,x\right]$$

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

$$20\,i\,\text{ArcCosh}\left[c\,x\right]\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right]$$

$$\text{Log}\left[1+\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]-10\,\text{ArcCosh}\left[c\,x\right]$$

$$\text{Log}\left[1-i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]\text{Log}\left[1+\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]+10\,\text{ArcCosh}\left[c\,x\right]\text{Log}\left[1+i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]\text{Log}\left[1+\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]+$$

$$10\left(\text{Log}\left[1-\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]-\text{Log}\left[1+\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]\right)\text{PolyLog}\left[2,-i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]-$$

$$10\left(\text{Log}\left[1-\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]-\text{Log}\left[1+\frac{i\left(1+c\,x\right)\left(-i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}\left[c\,x\right]\right]\right)^2}{2\,c\,x}\right]\right)\text{PolyLog}\left[2,i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]+$$

$$10\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$
$$10\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$
$$10\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,-i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$
$$10\,\text{ArcCosh}[c\,x]\,\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$
$$10\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]+$$
$$10\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,i\,e^{2\,i\,\text{ArcTan}\left[\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]}\right]-$$
$$20\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{PolyLog}\left[2,\,-c\,x-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right]+$$
$$20\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{PolyLog}\left[2,\,-c\,x-\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right]+$$
$$20\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{PolyLog}\left[2,\,-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]-$$
$$20\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]\text{PolyLog}\left[2,\,i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]+$$
$$20\,\text{Log}\left[-i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]$$
$$\text{PolyLog}\left[2,\,\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+10$$
$$\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$
$$10\,\text{Log}\left[\frac{(1-i)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$
$$\text{PolyLog}\left[2,\,\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-10$$
$$\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\,\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$
$$10\,\text{Log}\left[\frac{(1+i)\left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]\text{PolyLog}\left[2,$$
$$\left(-\frac{1}{2}-\frac{i}{2}\right)\left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-20\,\text{Log}\left[i\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,(1+c\,x)\right)\right]$$

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-10$$

$$\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

$$10\,\text{Log}\left[\frac{(1-i)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+10$$

$$\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\ \left(-\frac{1}{2}+\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

$$10\,\text{Log}\left[\frac{(1+i)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]\text{PolyLog}\left[2,\right.$$

$$\left.\left(-\frac{1}{2}+\frac{i}{2}\right)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-20\,\text{Log}\left[-i\ \left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\ (1+c\,x)\right)\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

$$10\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

$$10\,\text{Log}\left[\frac{(1-i)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

$$10\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

$$10\,\text{Log}\left[\frac{(1+i)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}-\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+20$$

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

$$10\,\text{Log}\left[1-\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]+$$

$$10\,\text{Log}\left[\frac{(1-i)\ \left(-1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]}\right]$$

$$\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

$$10\,\text{Log}\left[1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right]\text{PolyLog}\left[2,\ \left(\frac{1}{2}+\frac{i}{2}\right)\ \left(1+\text{Tanh}\left[\frac{1}{2}\text{ArcCosh}[c\,x]\right]\right)\right]-$$

$$10\,\text{Log}\left[\frac{\left(1+i\right)\,\left(1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)}{i+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]}\right]$$

$$\text{PolyLog}\left[2,\,\left(\frac{1}{2}+\frac{i}{2}\right)\,\left(1+\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]\right)\right]-10\,\text{PolyLog}\left[3,\,-i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]+$$

$$10\,\text{PolyLog}\left[3,\,i\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]-20\,\text{PolyLog}\left[3,\,-i\,\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]+$$

$$20\,\text{PolyLog}\left[3,\,i\,\left(c\,x+\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\right)\right]+$$

$$\frac{1}{12\,\sqrt{-d\,\left(-1+c\,x\right)\,\left(1+c\,x\right)}}\left(\frac{12\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\,\text{ArcCosh}\left[c\,x\right]}{c\,x}+\right.$$

$$\frac{6\,\left(-1+c\,x\right)\,\left(1+c\,x\right)\,\text{ArcCosh}\left[c\,x\right]^2}{c^2\,x^2}-4\,\text{Cosh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]^2+$$

$$26\,\text{ArcCosh}\left[c\,x\right]^2\,\text{Cosh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]^2-$$

$$2\,\text{ArcCosh}\left[c\,x\right]\,\text{Coth}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]-$$

$$\text{ArcCosh}\left[c\,x\right]^2\,\text{Coth}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]^2-$$

$$52\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\,\text{ArcCosh}\left[c\,x\right]\,\text{Log}\left[1-e^{-\text{ArcCosh}\left[c\,x\right]}\right]+$$

$$52\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\,\text{ArcCosh}\left[c\,x\right]\,\text{Log}\left[1+e^{-\text{ArcCosh}\left[c\,x\right]}\right]-$$

$$52\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\,\text{PolyLog}\left[2,\,-e^{-\text{ArcCosh}\left[c\,x\right]}\right]+$$

$$52\,\sqrt{\frac{-1+c\,x}{1+c\,x}}\,\left(1+c\,x\right)\,\text{PolyLog}\left[2,\,e^{-\text{ArcCosh}\left[c\,x\right]}\right]+$$

$$4\,\text{Sinh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]^2-26\,\text{ArcCosh}\left[c\,x\right]^2\,\text{Sinh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]^2-$$

$$2\,\text{ArcCosh}\left[c\,x\right]\,\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}\left[c\,x\right]\right]-$$

$$\text{ArcCosh}[c\,x]^2\,\text{Tanh}\left[\frac{1}{2}\,\text{ArcCosh}[c\,x]\right]^2\Bigg)\Bigg)$$

Problem 250: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{ArcCosh}[a\,x]^3}{\left(c-a^2\,c\,x^2\right)^{3/2}}\,dx$$

Optimal (type 4, 241 leaves, 8 steps):

$$\frac{x\,\text{ArcCosh}[a\,x]^3}{c\sqrt{c-a^2\,c\,x^2}}+\frac{\sqrt{-1+a\,x}\,\sqrt{1+a\,x}\,\text{ArcCosh}[a\,x]^3}{a\,c\sqrt{c-a^2\,c\,x^2}}-\frac{3\sqrt{-1+a\,x}\,\sqrt{1+a\,x}\,\text{ArcCosh}[a\,x]^2\,\text{Log}\left[1-e^{2\,\text{ArcCosh}[a\,x]}\right]}{a\,c\sqrt{c-a^2\,c\,x^2}}-\frac{3\sqrt{-1+a\,x}\,\sqrt{1+a\,x}\,\text{ArcCosh}[a\,x]\,\text{PolyLog}\left[2,\,e^{2\,\text{ArcCosh}[a\,x]}\right]}{a\,c\sqrt{c-a^2\,c\,x^2}}+\frac{3\sqrt{-1+a\,x}\,\sqrt{1+a\,x}\,\text{PolyLog}\left[3,\,e^{2\,\text{ArcCosh}[a\,x]}\right]}{2\,a\,c\sqrt{c-a^2\,c\,x^2}}$$

Result (type 4, 212 leaves):

$$-\Bigg(\Bigg(i\,\pi^3\sqrt{\frac{-1+a\,x}{1+a\,x}}\,(1+a\,x)-8\,a\,x\,\text{ArcCosh}[a\,x]^3-8\sqrt{\frac{-1+a\,x}{1+a\,x}}\,(1+a\,x)\,\text{ArcCosh}[a\,x]^3+24\sqrt{\frac{-1+a\,x}{1+a\,x}}\,(1+a\,x)\,\text{ArcCosh}[a\,x]^2\,\text{Log}\left[1-e^{2\,\text{ArcCosh}[a\,x]}\right]+24\sqrt{\frac{-1+a\,x}{1+a\,x}}\,(1+a\,x)\,\text{ArcCosh}[a\,x]\,\text{PolyLog}\left[2,\,e^{2\,\text{ArcCosh}[a\,x]}\right]-12\sqrt{\frac{-1+a\,x}{1+a\,x}}\,(1+a\,x)\,\text{PolyLog}\left[3,\,e^{2\,\text{ArcCosh}[a\,x]}\right]\Bigg)\Big/\left(8\,a\,c\sqrt{-c\,(-1+a\,x)\,(1+a\,x)}\right)\Bigg)$$

Problem 251: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{ArcCosh}[a\,x]^3}{\left(c-a^2\,c\,x^2\right)^{5/2}}\,dx$$

Optimal (type 4, 428 leaves, 12 steps):

$$-\frac{x\,\text{ArcCosh}[a\,x]}{c^2\sqrt{c-a^2\,c\,x^2}}+\frac{\sqrt{-1+a\,x}\,\sqrt{1+a\,x}\,\text{ArcCosh}[a\,x]^2}{2\,a\,c^2\left(1-a^2\,x^2\right)\sqrt{c-a^2\,c\,x^2}}+\frac{2\,x\,\text{ArcCosh}[a\,x]^3}{3\,c^2\sqrt{c-a^2\,c\,x^2}}+$$

$$\frac{x\,\text{ArcCosh}[a\,x]^3}{3\,c^2\left(1-a\,x\right)\left(1+a\,x\right)\sqrt{c-a^2\,c\,x^2}}+\frac{2\sqrt{-1+a\,x}\,\sqrt{1+a\,x}\,\text{ArcCosh}[a\,x]^3}{3\,a\,c^2\sqrt{c-a^2\,c\,x^2}}-$$

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

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

$$\frac{\sqrt{-1+a\,x}\,\sqrt{1+a\,x}\,\text{PolyLog}\left[3,\,e^{2\,\text{ArcCosh}[a\,x]}\right]}{a\,c^2\sqrt{c-a^2\,c\,x^2}}$$

Result (type 4, 258 leaves):

$$\left(\sqrt{\frac{-1+a\,x}{1+a\,x}}\,\left(1+a\,x\right)\left(-i\,\pi^3-\frac{12\,a\,x\,\sqrt{\frac{-1+a\,x}{1+a\,x}}\,\text{ArcCosh}[a\,x]}{-1+a\,x}+\frac{6\,\text{ArcCosh}[a\,x]^2}{1-a^2\,x^2}+\right.\right.$$

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

$$24\,\text{ArcCosh}[a\,x]^2\,\text{Log}\left[1-e^{2\,\text{ArcCosh}[a\,x]}\right]+12\,\text{Log}\left[\sqrt{\frac{-1+a\,x}{1+a\,x}}\,\left(1+a\,x\right)\right]-24\,\text{ArcCosh}[a\,x]$$

$$\left.\left.\text{PolyLog}\left[2,\,e^{2\,\text{ArcCosh}[a\,x]}\right]+12\,\text{PolyLog}\left[3,\,e^{2\,\text{ArcCosh}[a\,x]}\right]\right)\right)\Big/\left(12\,a\,c^2\sqrt{c-a^2\,c\,x^2}\right)$$

Problem 252: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{ArcCosh}[a\,x]^3}{\left(c-a^2\,c\,x^2\right)^{7/2}}\,dx$$

Optimal (type 4, 637 leaves, 18 steps):

$$-\frac{\sqrt{-1+a x}\ \sqrt{1+a x}}{20 a c^3 \left(1-a^2 x^2\right) \sqrt{c-a^2 c x^2}}-\frac{x \operatorname{ArcCosh}[a x]}{c^3 \sqrt{c-a^2 c x^2}}-\frac{x \operatorname{ArcCosh}[a x]}{10 c^3 (1-a x) (1+a x) \sqrt{c-a^2 c x^2}}+$$
$$\frac{3 \sqrt{-1+a x}\ \sqrt{1+a x}\ \operatorname{ArcCosh}[a x]^2}{20 a c^3 \left(1-a^2 x^2\right)^2 \sqrt{c-a^2 c x^2}}+\frac{2 \sqrt{-1+a x}\ \sqrt{1+a x}\ \operatorname{ArcCosh}[a x]^2}{5 a c^3 \left(1-a^2 x^2\right) \sqrt{c-a^2 c x^2}}+\frac{8 x \operatorname{ArcCosh}[a x]^3}{15 c^3 \sqrt{c-a^2 c x^2}}+$$
$$\frac{x \operatorname{ArcCosh}[a x]^3}{5 c^3 (1-a x)^2 (1+a x)^2 \sqrt{c-a^2 c x^2}}+\frac{4 x \operatorname{ArcCosh}[a x]^3}{15 c^3 (1-a x) (1+a x) \sqrt{c-a^2 c x^2}}+$$
$$\frac{8 \sqrt{-1+a x}\ \sqrt{1+a x}\ \operatorname{ArcCosh}[a x]^3}{15 a c^3 \sqrt{c-a^2 c x^2}}-\frac{8 \sqrt{-1+a x}\ \sqrt{1+a x}\ \operatorname{ArcCosh}[a x]^2 \operatorname{Log}\left[1-e^{2 \operatorname{ArcCosh}[a x]}\right]}{5 a c^3 \sqrt{c-a^2 c x^2}}+$$
$$\frac{\sqrt{-1+a x}\ \sqrt{1+a x}\ \operatorname{Log}\left[1-a^2 x^2\right]}{2 a c^3 \sqrt{c-a^2 c x^2}}-\frac{8 \sqrt{-1+a x}\ \sqrt{1+a x}\ \operatorname{ArcCosh}[a x]\ \operatorname{PolyLog}\left[2, e^{2 \operatorname{ArcCosh}[a x]}\right]}{5 a c^3 \sqrt{c-a^2 c x^2}}+$$
$$\frac{4 \sqrt{-1+a x}\ \sqrt{1+a x}\ \operatorname{PolyLog}\left[3, e^{2 \operatorname{ArcCosh}[a x]}\right]}{5 a c^3 \sqrt{c-a^2 c x^2}}$$

Result (type 4, 363 leaves):

$$-\frac{1}{60 a c^3 \sqrt{c-a^2 c x^2}} \sqrt{\frac{-1+a x}{1+a x}}\ (1+a x)$$
$$\left(4 i \pi^3+\frac{3}{1-a^2 x^2}+\frac{60 a x \sqrt{\frac{-1+a x}{1+a x}}\ \operatorname{ArcCosh}[a x]}{-1+a x}-\frac{6 a x \left(\frac{-1+a x}{1+a x}\right)^{3/2} \operatorname{ArcCosh}[a x]}{(-1+a x)^3}-\right.$$
$$\frac{9 \operatorname{ArcCosh}[a x]^2}{\left(-1+a^2 x^2\right)^2}+\frac{24 \operatorname{ArcCosh}[a x]^2}{-1+a^2 x^2}-32 \operatorname{ArcCosh}[a x]^3-\frac{32 a x \sqrt{\frac{-1+a x}{1+a x}}\ \operatorname{ArcCosh}[a x]^3}{-1+a x}+$$
$$\frac{16 a x \left(\frac{-1+a x}{1+a x}\right)^{3/2} \operatorname{ArcCosh}[a x]^3}{(-1+a x)^3}-\frac{12 a x \sqrt{\frac{-1+a x}{1+a x}}\ \operatorname{ArcCosh}[a x]^3}{(-1+a x)^3 (1+a x)^2}+$$
$$96 \operatorname{ArcCosh}[a x]^2 \operatorname{Log}\left[1-e^{2 \operatorname{ArcCosh}[a x]}\right]-60 \operatorname{Log}\left[\sqrt{\frac{-1+a x}{1+a x}}\ (1+a x)\right]+$$
$$\left.96 \operatorname{ArcCosh}[a x] \operatorname{PolyLog}\left[2, e^{2 \operatorname{ArcCosh}[a x]}\right]-48 \operatorname{PolyLog}\left[3, e^{2 \operatorname{ArcCosh}[a x]}\right]\right)$$

Problem 336: Attempted integration timed out after 120 seconds.

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

Optimal (type 8, 68 leaves, 1 step):

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

Result (type 1, 1 leaves):

???

Problem 337: Attempted integration timed out after 120 seconds.

$$\int \frac{\sqrt{1-c^2 x^2}}{x^4 \left(a+b\,\text{ArcCosh}[c x]\right)^2}\,dx$$

Optimal (type 8, 68 leaves, 1 step):

$$\frac{\sqrt{1-c^2 x^2}\ \text{Int}\left[\frac{\sqrt{-1+c x}\ \sqrt{1+c x}}{x^4 \left(a+b\,\text{ArcCosh}[c x]\right)^2}, x\right]}{\sqrt{-1+c x}\ \sqrt{1+c x}}$$

Result (type 1, 1 leaves):

???

Problem 344: Attempted integration timed out after 120 seconds.

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

Optimal (type 8, 69 leaves, 1 step):

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

Result (type 1, 1 leaves):

???

Problem 345: Attempted integration timed out after 120 seconds.

$$\int \frac{\left(1-c^2 x^2\right)^{3/2}}{x^4 \left(a+b\,\text{ArcCosh}[c x]\right)^2}\,dx$$

Optimal (type 8, 127 leaves, 2 steps):

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

Result (type 1, 1 leaves):

???

Problem 346: Attempted integration timed out after 120 seconds.

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

Optimal (type 8, 69 leaves, 1 step):

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

Result (type 1, 1 leaves):

???

Problem 352: Attempted integration timed out after 120 seconds.

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

Optimal (type 8, 195 leaves, 2 steps):

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

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

Result (type 1, 1 leaves):

???

Problem 353: Attempted integration timed out after 120 seconds.

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

Optimal (type 8, 68 leaves, 1 step):

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

Result (type 1, 1 leaves):

???

Problem 354: Attempted integration timed out after 120 seconds.

$$\int \frac{\left(1-c^2 x^2\right)^{5/2}}{x^4 \left(a+b \operatorname{ArcCosh}[c x]\right)^2} \, dx$$

Optimal (type 8, 68 leaves, 1 step):

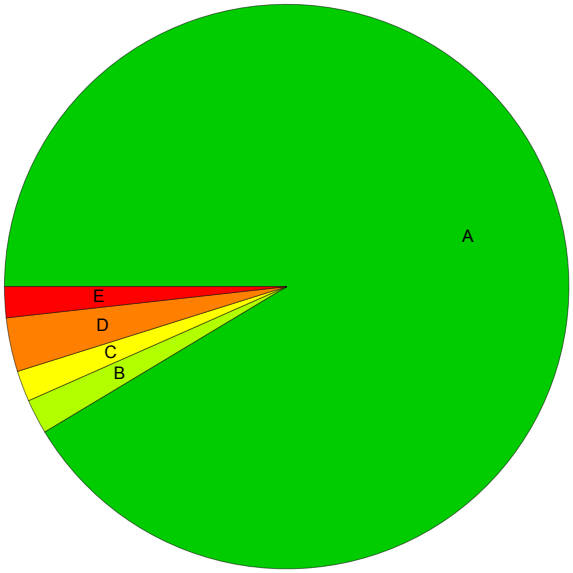
$$\frac{\sqrt{1-c^2 x^2}\ \operatorname{Int}\left[\frac{(-1+c x)^{5/2}(1+c x)^{5/2}}{x^4 (a+b \operatorname{ArcCosh}[c x])^2}, x\right]}{\sqrt{-1+c x}\ \sqrt{1+c x}}$$

Result (type 1, 1 leaves):

???

Summary of Integration Test Results

453 integration problems



A - 414 optimal antiderivatives

B - 9 more than twice size of optimal antiderivatives

C - 8 unnecessarily complex antiderivatives

D - 14 unable to integrate problems

E - 8 integration timeouts