Mathematica 7 Test Results

For Integration Problems Involving Inverse Hyperbolic Functions

Problems involving inverse hyperbolic sines

Unable to integrate:

$\{\text{ArcSinh}[c\, e^{a+b x}], x, 6, 0\}$

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

$$\int \text{ArcSinh}[c\, e^{a+b x}]\, dx$$

Valid but unnecessarily complicated antiderivative:

$\left\{\frac{\text{ArcSinh}[a x^n]}{x}, x, 5, 0\right\}$

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

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

Valid but unnecessarily complicated antiderivative:

$\left\{\text{ArcSinh}\left[\frac{c}{a+b x}\right], x, 2, 0\right\}$

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

$$x\, \text{ArcSinh}\left[\frac{c}{a+b x}\right]+\left((a+b x) \sqrt{\frac{a^2+c^2+2 a b x+b^2 x^2}{(a+b x)^2}}\right.$$
$$\left.\left(-a\, \text{Log}[a c (a+b x)]+a\, \text{Log}\left[-2 b^2 c \left(c+\sqrt{a^2+c^2+2 a b x+b^2 x^2}\right)\right]+c\, \text{Log}\left[2 \left(a+b x+\sqrt{a^2+c^2+2 a b x+b^2 x^2}\right)\right]\right)\right) \Big/ \left(b\right.$$
$$\left.\sqrt{a^2+c^2+2 a b x+b^2 x^2}\right)$$

Problems involving inverse hyperbolic cosines

Unable to integrate:

$$\left\{\text{ArcCosh}\left[c\,\mathrm{e}^{a+b x}\right],\ x,\ 6,\ 0\right\}$$

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

$$\int\text{ArcCosh}\left[c\,\mathrm{e}^{a+b x}\right]\,\mathrm{d}x$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCosh}[a\,x^n]}{x},\ x,\ 5,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\text{ArcCosh}\left[\frac{c}{a+b\,x}\right],\ x,\ 2,\ 0\right\}$$

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

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

Problems involving inverse hyperbolic tangents

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTanh}[a x]^3}{\sqrt{1-a^2 x^2}}, x, 11, 0\right\}$$

$$\frac{2\,\text{ArcTan}\left[e^{\text{ArcTanh}[a x]}\right]\text{ArcTanh}[a x]^3}{a} - \frac{3\,i\,\text{ArcTanh}[a x]^2\,\text{PolyLog}\left[2, -i\,e^{\text{ArcTanh}[a x]}\right]}{a} + \frac{3\,i\,\text{ArcTanh}[a x]^2\,\text{PolyLog}\left[2, i\,e^{\text{ArcTanh}[a x]}\right]}{a} + \frac{6\,i\,\text{ArcTanh}[a x]\,\text{PolyLog}\left[3, -i\,e^{\text{ArcTanh}[a x]}\right]}{a} - \frac{6\,i\,\text{ArcTanh}[a x]\,\text{PolyLog}\left[3, i\,e^{\text{ArcTanh}[a x]}\right]}{a} - \frac{6\,i\,\text{PolyLog}\left[4, -i\,e^{\text{ArcTanh}[a x]}\right]}{a} + \frac{6\,i\,\text{PolyLog}\left[4, i\,e^{\text{ArcTanh}[a x]}\right]}{a}$$

$$-\frac{1}{64 a} i \Big(7\pi^4 + 8 i \pi^3 \text{ArcTanh}[a x] + 24\pi^2 \text{ArcTanh}[a x]^2 - 32 i \pi \text{ArcTanh}[a x]^3 - 16\,\text{ArcTanh}[a x]^4 + 8 i \pi^3 \text{Log}\left[1 + i e^{-\text{ArcTanh}[a x]}\right] + 48\pi^2 \text{ArcTanh}[a x]\,\text{Log}\left[1 + i e^{-\text{ArcTanh}[a x]}\right] - 96 i \pi \text{ArcTanh}[a x]^2 \text{Log}\left[1 + i e^{-\text{ArcTanh}[a x]}\right] - 64\,\text{ArcTanh}[a x]^3 \text{Log}\left[1 + i e^{-\text{ArcTanh}[a x]}\right] - 48\pi^2 \text{ArcTanh}[a x]\,\text{Log}\left[1 - i e^{\text{ArcTanh}[a x]}\right] + 96 i \pi \text{ArcTanh}[a x]^2 \text{Log}\left[1 - i e^{\text{ArcTanh}[a x]}\right] - 8 i \pi^3 \text{Log}\left[1 + i e^{\text{ArcTanh}[a x]}\right] + 64\,\text{ArcTanh}[a x]^3 \text{Log}\left[1 + i e^{\text{ArcTanh}[a x]}\right] + 8 i \pi^3 \text{Log}\left[\text{Tan}\left[\frac{1}{4}(\pi + 2 i \text{ArcTanh}[a x])\right]\right] - 48(\pi - 2 i \text{ArcTanh}[a x])^2 \text{PolyLog}\left[2, -i e^{-\text{ArcTanh}[a x]}\right] + 192\,\text{ArcTanh}[a x]^2 \text{PolyLog}\left[2, -i e^{\text{ArcTanh}[a x]}\right] - 48\pi^2 \text{PolyLog}\left[2, i e^{\text{ArcTanh}[a x]}\right] + 192 i \pi \text{ArcTanh}[a x]\,\text{PolyLog}\left[2, i e^{\text{ArcTanh}[a x]}\right] + 192 i \pi \text{PolyLog}\left[3, -i e^{-\text{ArcTanh}[a x]}\right] + 384\,\text{ArcTanh}[a x]\,\text{PolyLog}\left[3, -i e^{-\text{ArcTanh}[a x]}\right] - 384\,\text{ArcTanh}[a x]\,\text{PolyLog}\left[3, -i e^{\text{ArcTanh}[a x]}\right] - 192 i \pi \text{PolyLog}\left[3, i e^{\text{ArcTanh}[a x]}\right] + 384\,\text{PolyLog}\left[4, -i e^{-\text{ArcTanh}[a x]}\right] + 384\,\text{PolyLog}\left[4, -i e^{\text{ArcTanh}[a x]}\right]\Big)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{x^2\,\text{ArcTanh}[a x]^3}{\left(1-a^2 x^2\right)^{3/2}}, x, 14, 0\right\}$$

$$-\frac{6}{a^3\sqrt{1-a^2 x^2}} + \frac{6 x\,\text{ArcTanh}[a x]}{a^2\sqrt{1-a^2 x^2}} - \frac{3\,\text{ArcTanh}[a x]^2}{a^3\sqrt{1-a^2 x^2}} + \frac{x\,\text{ArcTanh}[a x]^3}{a^2\sqrt{1-a^2 x^2}} - \frac{2\,\text{ArcTan}\left[e^{\text{ArcTanh}[a x]}\right]\text{ArcTanh}[a x]^3}{a^3} + \frac{3\,i\,\text{ArcTanh}[a x]^2\,\text{PolyLog}\left[2, -i\,e^{\text{ArcTanh}[a x]}\right]}{a^3} - \frac{3\,i\,\text{ArcTanh}[a x]^2\,\text{PolyLog}\left[2, i\,e^{\text{ArcTanh}[a x]}\right]}{a^3} - \frac{6\,i\,\text{ArcTanh}[a x]\,\text{PolyLog}\left[3, -i\,e^{\text{ArcTanh}[a x]}\right]}{a^3} + \frac{6\,i\,\text{ArcTanh}[a x]\,\text{PolyLog}\left[3, i\,e^{\text{ArcTanh}[a x]}\right]}{a^3} + \frac{6\,i\,\text{PolyLog}\left[4, -i\,e^{\text{ArcTanh}[a x]}\right]}{a^3} - \frac{6\,i\,\text{PolyLog}\left[4, i\,e^{\text{ArcTanh}[a x]}\right]}{a^3}$$

$$\frac{1}{64\,a^3}\Bigg(7\,i\,\pi^4-\frac{384}{\sqrt{1-a^2x^2}}-8\,\pi^3\,\text{ArcTanh}[a\,x]+\frac{384\,a\,x\,\text{ArcTanh}[a\,x]}{\sqrt{1-a^2x^2}}+24\,i\,\pi^2\,\text{ArcTanh}[a\,x]^2-\frac{192\,\text{ArcTanh}[a\,x]^2}{\sqrt{1-a^2x^2}}+32\,\pi\,\text{ArcTanh}[a\,x]^3+$$
$$\frac{64\,a\,x\,\text{ArcTanh}[a\,x]^3}{\sqrt{1-a^2x^2}}-16\,i\,\text{ArcTanh}[a\,x]^4-8\,\pi^3\,\text{Log}\left[1+i\,e^{-\text{ArcTanh}[a\,x]}\right]+48\,i\,\pi^2\,\text{ArcTanh}[a\,x]\,\text{Log}\left[1+i\,e^{-\text{ArcTanh}[a\,x]}\right]+$$
$$96\,\pi\,\text{ArcTanh}[a\,x]^2\,\text{Log}\left[1+i\,e^{-\text{ArcTanh}[a\,x]}\right]-64\,i\,\text{ArcTanh}[a\,x]^3\,\text{Log}\left[1+i\,e^{-\text{ArcTanh}[a\,x]}\right]-$$
$$48\,i\,\pi^2\,\text{ArcTanh}[a\,x]\,\text{Log}\left[1-i\,e^{\text{ArcTanh}[a\,x]}\right]-96\,\pi\,\text{ArcTanh}[a\,x]^2\,\text{Log}\left[1-i\,e^{\text{ArcTanh}[a\,x]}\right]+$$
$$8\,\pi^3\,\text{Log}\left[1+i\,e^{\text{ArcTanh}[a\,x]}\right]+64\,i\,\text{ArcTanh}[a\,x]^3\,\text{Log}\left[1+i\,e^{\text{ArcTanh}[a\,x]}\right]-8\,\pi^3\,\text{Log}\left[\text{Tan}\left[\frac{1}{4}\,(\pi+2\,i\,\text{ArcTanh}[a\,x])\right]\right]-$$
$$48\,i\,(\pi-2\,i\,\text{ArcTanh}[a\,x])^2\,\text{PolyLog}\left[2,-i\,e^{-\text{ArcTanh}[a\,x]}\right]+192\,i\,\text{ArcTanh}[a\,x]^2\,\text{PolyLog}\left[2,-i\,e^{\text{ArcTanh}[a\,x]}\right]-$$
$$48\,i\,\pi^2\,\text{PolyLog}\left[2,i\,e^{\text{ArcTanh}[a\,x]}\right]-192\,\pi\,\text{ArcTanh}[a\,x]\,\text{PolyLog}\left[2,i\,e^{\text{ArcTanh}[a\,x]}\right]-192\,\pi\,\text{PolyLog}\left[3,-i\,e^{-\text{ArcTanh}[a\,x]}\right]+$$
$$384\,i\,\text{ArcTanh}[a\,x]\,\text{PolyLog}\left[3,-i\,e^{-\text{ArcTanh}[a\,x]}\right]-384\,i\,\text{ArcTanh}[a\,x]\,\text{PolyLog}\left[3,-i\,e^{\text{ArcTanh}[a\,x]}\right]+$$
$$192\,\pi\,\text{PolyLog}\left[3,i\,e^{\text{ArcTanh}[a\,x]}\right]+384\,i\,\text{PolyLog}\left[4,-i\,e^{-\text{ArcTanh}[a\,x]}\right]+384\,i\,\text{PolyLog}\left[4,-i\,e^{\text{ArcTanh}[a\,x]}\right]\Bigg)$$

Unable to integrate:

$$\left\{\sqrt{1-a^2x^2}\,\text{ArcTanh}[a\,x]^2,\,x,\,11,\,0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\sqrt{1-a^2x^2}\,\text{ArcTanh}[a\,x]^3,\,x,\,16,\,0\right\}$$

$$-\frac{6\,\text{ArcTan}\left[e^{\text{ArcTanh}[a\,x]}\right]\,\text{ArcTanh}[a\,x]}{a}+\frac{3\,\sqrt{1-a^2x^2}\,\text{ArcTanh}[a\,x]^2}{2\,a}+\frac{1}{2}\,x\,\sqrt{1-a^2x^2}\,\text{ArcTanh}[a\,x]^3+$$
$$\frac{\text{ArcTan}\left[e^{\text{ArcTanh}[a\,x]}\right]\,\text{ArcTanh}[a\,x]^3}{a}+\frac{3\,i\,\left(2-\text{ArcTanh}[a\,x]^2\right)\,\text{PolyLog}\left[2,-i\,e^{\text{ArcTanh}[a\,x]}\right]}{2\,a}-$$
$$\frac{3\,i\,\left(2-\text{ArcTanh}[a\,x]^2\right)\,\text{PolyLog}\left[2,i\,e^{\text{ArcTanh}[a\,x]}\right]}{2\,a}+\frac{3\,i\,\text{ArcTanh}[a\,x]\,\text{PolyLog}\left[3,-i\,e^{\text{ArcTanh}[a\,x]}\right]}{a}-$$
$$\frac{3\,i\,\text{ArcTanh}[a\,x]\,\text{PolyLog}\left[3,i\,e^{\text{ArcTanh}[a\,x]}\right]}{a}-\frac{3\,i\,\text{PolyLog}\left[4,-i\,e^{\text{ArcTanh}[a\,x]}\right]}{a}+\frac{3\,i\,\text{PolyLog}\left[4,i\,e^{\text{ArcTanh}[a\,x]}\right]}{a}$$

$$-\frac{1}{128\,a}\,i\left(7\pi^4+8\,i\,\pi^3\,\text{ArcTanh}[a\,x]+24\,\pi^2\,\text{ArcTanh}[a\,x]^2+\frac{192\,i\,\text{ArcTanh}[a\,x]^2}{\sqrt{1-a^2\,x^2}}-\frac{192\,i\,a^2\,x^2\,\text{ArcTanh}[a\,x]^2}{\sqrt{1-a^2\,x^2}}-\right.$$
$$32\,i\,\pi\,\text{ArcTanh}[a\,x]^3+\frac{64\,i\,a\,x\,\text{ArcTanh}[a\,x]^3}{\sqrt{1-a^2\,x^2}}-\frac{64\,i\,a^3\,x^3\,\text{ArcTanh}[a\,x]^3}{\sqrt{1-a^2\,x^2}}-16\,\text{ArcTanh}[a\,x]^4-$$
$$384\,\text{ArcTanh}[a\,x]\,\text{Log}\left[1-i\,e^{-\text{ArcTanh}[a\,x]}\right]+8\,i\,\pi^3\,\text{Log}\left[1+i\,e^{-\text{ArcTanh}[a\,x]}\right]+384\,\text{ArcTanh}[a\,x]\,\text{Log}\left[1+i\,e^{-\text{ArcTanh}[a\,x]}\right]+$$
$$48\,\pi^2\,\text{ArcTanh}[a\,x]\,\text{Log}\left[1+i\,e^{-\text{ArcTanh}[a\,x]}\right]-96\,i\,\pi\,\text{ArcTanh}[a\,x]^2\,\text{Log}\left[1+i\,e^{-\text{ArcTanh}[a\,x]}\right]-$$
$$64\,\text{ArcTanh}[a\,x]^3\,\text{Log}\left[1+i\,e^{-\text{ArcTanh}[a\,x]}\right]-48\,\pi^2\,\text{ArcTanh}[a\,x]\,\text{Log}\left[1-i\,e^{\text{ArcTanh}[a\,x]}\right]+$$
$$96\,i\,\pi\,\text{ArcTanh}[a\,x]^2\,\text{Log}\left[1-i\,e^{\text{ArcTanh}[a\,x]}\right]-8\,i\,\pi^3\,\text{Log}\left[1+i\,e^{\text{ArcTanh}[a\,x]}\right]+64\,\text{ArcTanh}[a\,x]^3\,\text{Log}\left[1+i\,e^{\text{ArcTanh}[a\,x]}\right]+$$
$$8\,i\,\pi^3\,\text{Log}\left[\text{Tan}\left[\frac{1}{4}\,(\pi+2\,i\,\text{ArcTanh}[a\,x])\right]\right]-48\,\left(8+\pi^2-4\,i\,\pi\,\text{ArcTanh}[a\,x]-4\,\text{ArcTanh}[a\,x]^2\right)\,\text{PolyLog}\left[2,\,-i\,e^{-\text{ArcTanh}[a\,x]}\right]+$$
$$384\,\text{PolyLog}\left[2,\,i\,e^{-\text{ArcTanh}[a\,x]}\right]+192\,\text{ArcTanh}[a\,x]^2\,\text{PolyLog}\left[2,\,-i\,e^{\text{ArcTanh}[a\,x]}\right]-48\,\pi^2\,\text{PolyLog}\left[2,\,i\,e^{\text{ArcTanh}[a\,x]}\right]+$$
$$192\,i\,\pi\,\text{ArcTanh}[a\,x]\,\text{PolyLog}\left[2,\,i\,e^{\text{ArcTanh}[a\,x]}\right]+192\,i\,\pi\,\text{PolyLog}\left[3,\,-i\,e^{-\text{ArcTanh}[a\,x]}\right]+$$
$$384\,\text{ArcTanh}[a\,x]\,\text{PolyLog}\left[3,\,-i\,e^{-\text{ArcTanh}[a\,x]}\right]-384\,\text{ArcTanh}[a\,x]\,\text{PolyLog}\left[3,\,-i\,e^{\text{ArcTanh}[a\,x]}\right]-$$
$$\left.192\,i\,\pi\,\text{PolyLog}\left[3,\,i\,e^{\text{ArcTanh}[a\,x]}\right]+384\,\text{PolyLog}\left[4,\,-i\,e^{-\text{ArcTanh}[a\,x]}\right]+384\,\text{PolyLog}\left[4,\,-i\,e^{\text{ArcTanh}[a\,x]}\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTanh}[a+b\,x]}{x},\,x,\,5,\,0\right\}$$

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

$$-\frac{1}{2}\,i\left(i\,(\text{ArcTanh}[a]-\text{ArcTanh}[a+b\,x])^2-\right.$$
$$\frac{1}{4}\,i\,(\pi-2\,i\,\text{ArcTanh}[a+b\,x])^2-2\,i\,(\text{ArcTanh}[a]-\text{ArcTanh}[a+b\,x])\,\text{Log}\left[1-e^{2\,\text{ArcTanh}[a]-2\,\text{ArcTanh}[a+b\,x]}\right]+$$
$$(\pi-2\,i\,\text{ArcTanh}[a+b\,x])\,\text{Log}\left[1+e^{2\,\text{ArcTanh}[a+b\,x]}\right]-(\pi-2\,i\,\text{ArcTanh}[a+b\,x])\,\text{Log}\left[\frac{2}{\sqrt{1-(a+b\,x)^2}}\right]+$$
$$2\,i\,\text{ArcTanh}[a+b\,x]\left(-\text{Log}\left[\frac{1}{\sqrt{1-(a+b\,x)^2}}\right]+\text{Log}[-i\,\text{Sinh}[\text{ArcTanh}[a]-\text{ArcTanh}[a+b\,x]]]\right)+$$
$$2\,i\,(\text{ArcTanh}[a]-\text{ArcTanh}[a+b\,x])\,\text{Log}[-2\,i\,\text{Sinh}[\text{ArcTanh}[a]-\text{ArcTanh}[a+b\,x]]]-$$
$$\left.i\,\text{PolyLog}\left[2,\,e^{2\,\text{ArcTanh}[a]-2\,\text{ArcTanh}[a+b\,x]}\right]-i\,\text{PolyLog}\left[2,\,-e^{2\,\text{ArcTanh}[a+b\,x]}\right]\right)$$

Unable to integrate:

$$\left\{\frac{\text{ArcTanh}[a+b\,x]^2}{x},\,x,\,-3,\,0\right\}$$

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

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

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

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTanh}[1+x]}{2+2\,x},\,x,\,5,\,0\right\}$$

$$-\frac{1}{4}\,\text{PolyLog}[2,-1-x]+\frac{1}{4}\,\text{PolyLog}[2,1+x]$$

$$\frac{1}{16}\left(-\pi^2+4\,i\,\pi\,\text{ArcTanh}[1+x]+8\,\text{ArcTanh}[1+x]^2+8\,\text{ArcTanh}[1+x]\,\text{Log}\left[1-e^{-2\,\text{ArcTanh}[1+x]}\right]-\right.$$
$$4\,i\,\pi\,\text{Log}\left[1+e^{2\,\text{ArcTanh}[1+x]}\right]-8\,\text{ArcTanh}[1+x]\,\text{Log}\left[1+e^{2\,\text{ArcTanh}[1+x]}\right]-8\,\text{ArcTanh}[1+x]\,\text{Log}\left[\frac{1}{\sqrt{-x\,(2+x)}}\right]+$$
$$4\,i\,\pi\,\text{Log}\left[\frac{2}{\sqrt{-x\,(2+x)}}\right]+8\,\text{ArcTanh}[1+x]\,\text{Log}\left[\frac{2}{\sqrt{-x\,(2+x)}}\right]+8\,\text{ArcTanh}[1+x]\,\text{Log}\left[\frac{i\,(1+x)}{\sqrt{-x\,(2+x)}}\right]-$$
$$\left.8\,\text{ArcTanh}[1+x]\,\text{Log}\left[\frac{2\,i\,(1+x)}{\sqrt{-x\,(2+x)}}\right]-4\,\text{PolyLog}\left[2,e^{-2\,\text{ArcTanh}[1+x]}\right]-4\,\text{PolyLog}\left[2,-e^{2\,\text{ArcTanh}[1+x]}\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTanh}[x]}{a+b\,x},\,x,\,3,\,0\right\}$$

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

$$\frac{1}{8b}\left(-\pi^2+4\,\text{ArcTanh}\left[\frac{a}{b}\right]^2+4\,i\,\pi\,\text{ArcTanh}[x]+8\,\text{ArcTanh}\left[\frac{a}{b}\right]\text{ArcTanh}[x]+8\,\text{ArcTanh}[x]^2-\right.$$
$$4\,i\,\pi\,\text{Log}\left[1+e^{2\,\text{ArcTanh}[x]}\right]-8\,\text{ArcTanh}[x]\,\text{Log}\left[1+e^{2\,\text{ArcTanh}[x]}\right]+8\,\text{ArcTanh}\left[\frac{a}{b}\right]\text{Log}\left[1-e^{-2\left(\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right)}\right]+$$
$$8\,\text{ArcTanh}[x]\,\text{Log}\left[1-e^{-2\left(\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right)}\right]+4\,i\,\pi\,\text{Log}\left[\frac{2}{\sqrt{1-x^2}}\right]+8\,\text{ArcTanh}[x]\,\text{Log}\left[\frac{2}{\sqrt{1-x^2}}\right]+4\,\text{ArcTanh}[x]\,\text{Log}\left[1-x^2\right]+$$
$$8\,\text{ArcTanh}[x]\,\text{Log}\left[i\,\text{Sinh}\left[\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right]\right]-8\,\text{ArcTanh}\left[\frac{a}{b}\right]\text{Log}\left[2\,i\,\text{Sinh}\left[\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right]\right]-$$
$$\left.8\,\text{ArcTanh}[x]\,\text{Log}\left[2\,i\,\text{Sinh}\left[\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right]\right]-4\,\text{PolyLog}\left[2,-e^{2\,\text{ArcTanh}[x]}\right]-4\,\text{PolyLog}\left[2,e^{-2\left(\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right)}\right]\right)$$

Unable to integrate:

$$\left\{\frac{\text{ArcTanh}[x]}{a+b\,x+c\,x^2},\,x,\,7,\,0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTanh}[d+e\,x]}{a+b\,x},\,x,\,3,\,0\right\}$$

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

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

Unable to integrate:

$$\left\{\frac{\text{ArcTanh}[d+e\,x]}{a+b\,x^2},\,x,\,7,\,0\right\}$$

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

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

Unable to integrate:

$$\left\{\frac{\text{ArcTanh}[d+e\,x]}{a+b\,x+c\,x^2},\,x,\,7,\,0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTanh}[b\,x]}{1-x^2},\ x,\ 9,\ 0\right\}$$

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

$$-\frac{1}{4\sqrt{-b^2}}\,b\left(2\,i\,\text{ArcCos}\left[\frac{1+b^2}{1-b^2}\right]\,\text{ArcTan}\left[\frac{b\,x}{\sqrt{-b^2}}\right]-4\,\text{ArcTan}\left[\frac{\sqrt{-b^2}}{b\,x}\right]\,\text{ArcTanh}[b\,x]-\left(\text{ArcCos}\left[\frac{1+b^2}{1-b^2}\right]-2\,\text{ArcTan}\left[\frac{b\,x}{\sqrt{-b^2}}\right]\right)\left(\text{Log}[2]+\text{Log}\left[\frac{b\left(-i+\sqrt{-b^2}\right)\,(-1+b\,x)}{\left(-1+b^2\right)\left(-i\,b+\sqrt{-b^2}\,x\right)}\right]\right)-\left(\text{ArcCos}\left[\frac{1+b^2}{1-b^2}\right]+2\,\text{ArcTan}\left[\frac{b\,x}{\sqrt{-b^2}}\right]\right)\,\text{Log}\left[\frac{2\,b\left(i+\sqrt{-b^2}\right)\,(1+b\,x)}{\left(-1+b^2\right)\left(-i\,b+\sqrt{-b^2}\,x\right)}\right]+\left(\text{ArcCos}\left[\frac{1+b^2}{1-b^2}\right]-2\left(\text{ArcTan}\left[\frac{\sqrt{-b^2}}{b\,x}\right]+\text{ArcTan}\left[\frac{b\,x}{\sqrt{-b^2}}\right]\right)\right)\,\text{Log}\left[\frac{\sqrt{2}\,\sqrt{-b^2}\,e^{-\text{ArcTanh}[b\,x]}}{\sqrt{-1+b^2}\,\sqrt{1+b^2+\left(-1+b^2\right)\,\text{Cosh}[2\,\text{ArcTanh}[b\,x]]}}\right]+\left(\text{ArcCos}\left[\frac{1+b^2}{1-b^2}\right]+2\left(\text{ArcTan}\left[\frac{\sqrt{-b^2}}{b\,x}\right]+\text{ArcTan}\left[\frac{b\,x}{\sqrt{-b^2}}\right]\right)\right)\,\text{Log}\left[\frac{\sqrt{2}\,\sqrt{-b^2}\,e^{\text{ArcTanh}[b\,x]}}{\sqrt{-1+b^2}\,\sqrt{1+b^2+\left(-1+b^2\right)\,\text{Cosh}[2\,\text{ArcTanh}[b\,x]]}}\right]+i\left(\text{PolyLog}\left[2,\ \frac{\left(1+b^2-2\,i\sqrt{-b^2}\right)\left(b-i\sqrt{-b^2}\,x\right)}{\left(-1+b^2\right)\left(b+i\sqrt{-b^2}\,x\right)}\right]-\text{PolyLog}\left[2,\ \frac{\left(1+b^2+2\,i\sqrt{-b^2}\right)\left(b-i\sqrt{-b^2}\,x\right)}{\left(-1+b^2\right)\left(b+i\sqrt{-b^2}\,x\right)}\right]\right)\right)$$

Unable to integrate:

$$\left\{\frac{\text{ArcTanh}[a+b\,x]}{1-x^2},\ x,\ 9,\ 0\right\}$$

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

$$\int \frac{\text{ArcTanh}[a+b\,x]}{1-x^2}\,dx$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTanh}[x]}{\left(a+b\,x^2\right)^{3/2}},\ x,\ 3,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTanh}[x]}{\left(a+b\,x^2\right)^{5/2}},\ x,\ 8,\ 0\right\}$$

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

$$\frac{1}{6\,a^2}\left(\frac{2\,a}{(a+b)\,\sqrt{a+b\,x^2}}+\frac{2\,x\,\left(3\,a+2\,b\,x^2\right)\,\text{ArcTanh}[x]}{\left(a+b\,x^2\right)^{3/2}}+\right.$$
$$\frac{(3\,a+2\,b)\,\text{Log}\left[\sqrt{a+b}\,(3\,a+2\,b)\,(-1+x)\right]}{(a+b)^{3/2}}+\frac{(3\,a+2\,b)\,\text{Log}\left[\sqrt{a+b}\,(3\,a+2\,b)\,(1+x)\right]}{(a+b)^{3/2}}-$$
$$\left.\frac{(3\,a+2\,b)\,\text{Log}\left[12\,a^2\,(a+b)\,\left(a-b\,x+\sqrt{a+b}\,\sqrt{a+b\,x^2}\right)\right]}{(a+b)^{3/2}}-\frac{(3\,a+2\,b)\,\text{Log}\left[12\,a^2\,(a+b)\,\left(a+b\,x+\sqrt{a+b}\,\sqrt{a+b\,x^2}\right)\right]}{(a+b)^{3/2}}\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTanh}[x]}{\left(a+b\,x^2\right)^{7/2}},\ x,\ 8,\ 0\right\}$$

$$\frac{1}{15\,a\,(a+b)\,\left(a+b\,x^2\right)^{3/2}}+\frac{7\,a+4\,b}{15\,a^2\,(a+b)^2\,\sqrt{a+b\,x^2}}+$$
$$\frac{x\,\left(8\,\left(a+b\,x^2\right)^2+a\,\left(7\,a+4\,b\,x^2\right)\right)\,\text{ArcTanh}[x]}{15\,a^3\,\left(a+b\,x^2\right)^{5/2}}-\frac{\left(15\,a^2+20\,a\,b+8\,b^2\right)\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,x^2}}{\sqrt{a+b}}\right]}{15\,a^3\,(a+b)^{5/2}}$$

$$\frac{1}{30\,a^3}\left(\frac{2\,a\,\left(8\,a^2+4\,b^2\,x^2+a\,b\,\left(5+7\,x^2\right)\right)}{(a+b)^2\,\left(a+b\,x^2\right)^{3/2}}+\right.$$
$$\frac{2\,x\,\left(15\,a^2+20\,a\,b\,x^2+8\,b^2\,x^4\right)\,\text{ArcTanh}[x]}{\left(a+b\,x^2\right)^{5/2}}+\frac{\left(15\,a^2+20\,a\,b+8\,b^2\right)\,\text{Log}\left[\sqrt{a+b}\,\left(15\,a^2+20\,a\,b+8\,b^2\right)\,(-1+x)\right]}{(a+b)^{5/2}}+$$
$$\frac{\left(15\,a^2+20\,a\,b+8\,b^2\right)\,\text{Log}\left[\sqrt{a+b}\,\left(15\,a^2+20\,a\,b+8\,b^2\right)\,(1+x)\right]}{(a+b)^{5/2}}-$$
$$\frac{\left(15\,a^2+20\,a\,b+8\,b^2\right)\,\text{Log}\left[60\,a^3\,(a+b)^2\,\left(a-b\,x+\sqrt{a+b}\,\sqrt{a+b\,x^2}\right)\right]}{(a+b)^{5/2}}-$$
$$\left.\frac{\left(15\,a^2+20\,a\,b+8\,b^2\right)\,\text{Log}\left[60\,a^3\,(a+b)^2\,\left(a+b\,x+\sqrt{a+b}\,\sqrt{a+b\,x^2}\right)\right]}{(a+b)^{5/2}}\right)$$

Valid but unnecessarily complicated antiderivative:

{ArcTanh[ⅇ^x], x, 3, 0}

$$-\frac{1}{2}\,\text{PolyLog}[2,-e^x]+\frac{1}{2}\,\text{PolyLog}[2,e^x]$$

$$\frac{1}{2}\,(x\,(2\,\text{ArcTanh}[e^x]+\text{Log}[1-e^x]-\text{Log}[1+e^x])-\text{PolyLog}[2,-e^x]+\text{PolyLog}[2,e^x])$$

Valid but unnecessarily complicated antiderivative:

{ArcTanh[b Tanh[x]], x, 12, 0}

$$x\,\text{ArcTanh}[b\,\text{Tanh}[x]]-\frac{1}{2}\,x\,\text{Log}\Big[1+\frac{(1-b^2)\,e^{2x}}{1-2\,b+b^2}\Big]+\frac{1}{2}\,x\,\text{Log}\Big[1+\frac{(1-b^2)\,e^{2x}}{1+2\,b+b^2}\Big]-\frac{1}{4}\,\text{PolyLog}\Big[2,-\frac{(1-b^2)\,e^{2x}}{1-2\,b+b^2}\Big]+\frac{1}{4}\,\text{PolyLog}\Big[2,-\frac{(1-b^2)\,e^{2x}}{1+2\,b+b^2}\Big]$$

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

Valid but unnecessarily complicated antiderivative:

{ArcTanh[b Coth[x]], x, 12, 0}

$$x\,\text{ArcTanh}[b\,\text{Coth}[x]]-\frac{1}{2}\,x\,\text{Log}\Big[1-\frac{(1-b^2)\,e^{2x}}{1-2\,b+b^2}\Big]+\frac{1}{2}\,x\,\text{Log}\Big[1-\frac{(1-b^2)\,e^{2x}}{1+2\,b+b^2}\Big]-\frac{1}{4}\,\text{PolyLog}\Big[2,\frac{(1-b^2)\,e^{2x}}{1-2\,b+b^2}\Big]+\frac{1}{4}\,\text{PolyLog}\Big[2,\frac{(1-b^2)\,e^{2x}}{1+2\,b+b^2}\Big]$$

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

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

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

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

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{2\,\text{ArcTanh}[x]}}{x},\ x,\ 5,\ 0\right\}$$

$$-2\,\text{Log}[1-x]+\text{Log}[x]$$

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

Valid but unnecessarily complicated antiderivative:

$$\left\{e^{\frac{\text{ArcTanh}[x]}{2}}\,x^2,\ x,\ 14,\ 0\right\}$$

$$\frac{1}{8}\,e^{\frac{\text{ArcTanh}[x]}{2}}\,(1-x)+\frac{1}{28}\,e^{\frac{\text{ArcTanh}[x]}{2}}\,(1-x)^2-\frac{1}{7}\,e^{\frac{\text{ArcTanh}[x]}{2}}\,(1-x)^3-\frac{1}{7}\,e^{\frac{5\,\text{ArcTanh}[x]}{2}}\,(1-x)^3-\frac{1}{3}\,e^{\frac{9\,\text{ArcTanh}[x]}{2}}\,(1-x)^3-\frac{3\,\text{ArcTan}\left[1-\sqrt{2}\,e^{\frac{\text{ArcTanh}[x]}{2}}\right]}{8\sqrt{2}}+$$

$$\frac{3\,\text{ArcTan}\left[1+\sqrt{2}\,e^{\frac{\text{ArcTanh}[x]}{2}}\right]}{8\sqrt{2}}-\frac{3\,\text{Log}\left[1-\sqrt{2}\,e^{\frac{\text{ArcTanh}[x]}{2}}+e^{\text{ArcTanh}[x]}\right]}{16\sqrt{2}}+\frac{3\,\text{Log}\left[1+\sqrt{2}\,e^{\frac{\text{ArcTanh}[x]}{2}}+e^{\text{ArcTanh}[x]}\right]}{16\sqrt{2}}$$

$$-\frac{8\,e^{\frac{\text{ArcTanh}[x]}{2}}\left(9+6\,e^{2\,\text{ArcTanh}[x]}+29\,e^{4\,\text{ArcTanh}[x]}\right)+9\left(1+e^{2\,\text{ArcTanh}[x]}\right)^3\text{RootSum}\left[1+\#1^4\,\&,\ \frac{\text{ArcTanh}[x]-2\,\text{Log}\left[-3\,e^{\frac{\text{ArcTanh}[x]}{2}}+3\,\#1\right]}{\#1^3}\,\&\right]}{96\left(1+e^{2\,\text{ArcTanh}[x]}\right)^3}$$

Valid but unnecessarily complicated antiderivative:

$$\left\{e^{\frac{\text{ArcTanh}[x]}{2}}\,x,\ x,\ 12,\ 0\right\}$$

$$\frac{1}{12} e^{\frac{\text{ArcTanh}[x]}{2}} (1-x) - \frac{1}{6} e^{\frac{\text{ArcTanh}[x]}{2}} (1-x)^2 - \frac{2}{3} e^{\frac{5\,\text{ArcTanh}[x]}{2}} (1-x)^2 - \frac{\text{ArcTan}\left[1-\sqrt{2}\, e^{\frac{\text{ArcTanh}[x]}{2}}\right]}{4\sqrt{2}} + \frac{\text{ArcTan}\left[1+\sqrt{2}\, e^{\frac{\text{ArcTanh}[x]}{2}}\right]}{4\sqrt{2}} - \frac{\text{Log}\left[1-\sqrt{2}\, e^{\frac{\text{ArcTanh}[x]}{2}} + e^{\text{ArcTanh}[x]}\right]}{8\sqrt{2}} + \frac{\text{Log}\left[1+\sqrt{2}\, e^{\frac{\text{ArcTanh}[x]}{2}} + e^{\text{ArcTanh}[x]}\right]}{8\sqrt{2}}$$

$$\frac{2\, e^{\frac{\text{ArcTanh}[x]}{2}}}{\left(1+e^{2\,\text{ArcTanh}[x]}\right)^2} - \frac{5\, e^{\frac{\text{ArcTanh}[x]}{2}}}{2\left(1+e^{2\,\text{ArcTanh}[x]}\right)} + \frac{1}{16}\,\text{RootSum}\left[1+\#1^4\,\&,\ \frac{-\text{ArcTanh}[x] + 2\,\text{Log}\left[-e^{\frac{\text{ArcTanh}[x]}{2}} + \#1\right]}{\#1^3}\,\&\right]$$

Valid but unnecessarily complicated antiderivative:

$$\left\{e^{\frac{\text{ArcTanh}[x]}{2}},\ x,\ 8,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{\frac{\text{ArcTanh}[x]}{2}}}{x},\ x,\ 12,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{e^{\frac{\text{ArcTanh}[x]}{3}},\ x,\ 8,\ 0\right\}$$

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

$$-\frac{2\, e^{\frac{\text{ArcTanh}[x]}{3}}}{1+e^{2\,\text{ArcTanh}[x]}} + \frac{2}{3}\,\text{ArcTan}\left[e^{\frac{\text{ArcTanh}[x]}{3}}\right] +$$

$$\frac{1}{9}\,\text{RootSum}\left[1-\#1^2+\#1^4\,\&,\ \frac{-2\,\text{ArcTanh}[x] + 6\,\text{Log}\left[-e^{\frac{\text{ArcTanh}[x]}{3}} + \#1\right] + \text{ArcTanh}[x]\,\#1^2 - 3\,\text{Log}\left[-e^{\frac{\text{ArcTanh}[x]}{3}} + \#1\right]\#1^2}{-\#1 + 2\,\#1^3}\,\&\right]$$

Valid but unnecessarily complicated antiderivative:

$$\left\{e^{\frac{2\,\text{ArcTanh}[x]}{3}},\ x,\ 7,\ 0\right\}$$

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

$$-\frac{2 e^{\frac{2 \text{ArcTanh}[x]}{3}}}{1+e^{2 \text{ArcTanh}[x]}}-\frac{4 \text{ArcTanh}[x]}{9}+\frac{2}{3} \text{Log}\left[-4 \left(1+e^{\frac{2 \text{ArcTanh}[x]}{3}}\right)\right]-$$
$$\frac{2}{9} \text{RootSum}\left[1-\#1^2+\#1^4 \&, \frac{\text{ArcTanh}[x]-3 \text{Log}\left[-e^{\frac{\text{ArcTanh}[x]}{3}}+\#1\right]+\text{ArcTanh}[x] \#1^2-3 \text{Log}\left[-e^{\frac{\text{ArcTanh}[x]}{3}}+\#1\right] \#1^2}{-2+\#1^2} \&\right]$$

Valid but unnecessarily complicated antiderivative:

$$\left\{e^{\frac{\text{ArcTanh}[x]}{4}}, x, 22, 0\right\}$$

$$-(1-x)^{7/8} (1+x)^{1/8}-\frac{1}{2} (-1)^{1/8} \text{ArcTan}\left[\frac{(-1)^{1/8} (1-x)^{1/8}}{(1+x)^{1/8}}\right]-\frac{1}{2} (-1)^{7/8} \text{ArcTan}\left[\frac{(-1)^{7/8} (1-x)^{1/8}}{(1+x)^{1/8}}\right]+$$
$$\frac{1}{2} (-1)^{1/8} \text{ArcTanh}\left[\frac{(-1)^{1/8} (1-x)^{1/8}}{(1+x)^{1/8}}\right]+\frac{1}{2} (-1)^{7/8} \text{ArcTanh}\left[\frac{(-1)^{7/8} (1-x)^{1/8}}{(1+x)^{1/8}}\right]$$

$$-\frac{2 e^{\frac{\text{ArcTanh}[x]}{4}}}{1+e^{2 \text{ArcTanh}[x]}}+\frac{1}{16} \text{RootSum}\left[1+\#1^8 \&, \frac{-\text{ArcTanh}[x]+4 \text{Log}\left[-e^{\frac{\text{ArcTanh}[x]}{4}}+\#1\right]}{\#1^7} \&\right]$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{\text{ArcTanh}[a+b x]}}{x \left(1-a^2-2 a b x-b^2 x^2\right)}, x, 7, 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{e^{\text{ArcTanh}[x]} \sqrt{1-x}, x, 2, 0\right\}$$

$$\frac{2}{3} (1+x)^{3/2}$$

$$\frac{2 (1+x) \sqrt{1-x^2}}{3 \sqrt{1-x}}$$

Valid but unnecessarily complicated antiderivative:

$$\left\{e^{\text{ArcTanh}[x]} x (1+x)^{3/2} \text{Sin}[x], x, 26, 0\right\}$$

$$\frac{17}{4} \sqrt{1-x} \text{Cos}[x]-5 (1-x)^{3/2} \text{Cos}[x]+(1-x)^{5/2} \text{Cos}[x]+\frac{1}{4} \sqrt{\frac{\pi}{2}} \text{FresnelS}\left[\sqrt{\frac{2}{\pi}} \sqrt{1-x}\right] (2 \text{Cos}[1]-17 \text{Sin}[1])-$$
$$\frac{1}{4} \sqrt{\frac{\pi}{2}} \text{FresnelC}\left[\sqrt{\frac{2}{\pi}} \sqrt{1-x}\right] (17 \text{Cos}[1]+2 \text{Sin}[1])-\frac{15}{2} \sqrt{1-x} \text{Sin}[x]+\frac{5}{2} (1-x)^{3/2} \text{Sin}[x]$$

$$\frac{1}{16\sqrt{1+x}\,\sqrt{1-x^2}}\Bigg(-e^{-i(1+x)}(1+x)\Big((30+16i)e^{i}+(30-16i)e^{i+2ix}-(18+7i)e^{i(2+x)}\sqrt{\pi}\sqrt{-i(-1+x)}-(18-7i)e^{ix}\sqrt{\pi}\sqrt{i(-1+x)}-(38-4i)e^{i}x-(38+4i)e^{i+2ix}x-20ie^{i}x^2+20ie^{i+2ix}x^2+8e^{i}x^3+8e^{i+2ix}x^3+(18+7i)e^{i(2+x)}\sqrt{\pi}\sqrt{-i(-1+x)}\,\mathrm{Erf}\Big[\sqrt{-i(-1+x)}\Big]+(18-7i)e^{ix}\sqrt{\pi}\sqrt{i(-1+x)}\,\mathrm{Erf}\Big[\sqrt{i(-1+x)}\Big]\Big)-\frac{1}{\sqrt{-1+x}}4e^{-i(1+x)}\left(-1+x^2\right)\Big(2e^{i}\sqrt{-1+x}\,\big((2-3i)+2x+e^{2ix}((2+3i)+2x)\big)+(4+3i)(-1)^{3/4}e^{i(2+x)}\sqrt{\pi}\,\mathrm{Erfi}\Big[(-1)^{1/4}\sqrt{-1+x}\Big]+(4-3i)(-1)^{1/4}e^{ix}\sqrt{\pi}\,\mathrm{Erfi}\Big[(-1)^{3/4}\sqrt{-1+x}\Big]\Big)+\frac{1}{\sqrt{-1+x}}(4+4i)\left(-1+x^2\right)\Bigg((-4+4i)\sqrt{-1+x}\,\mathrm{Cos}[x]+(1+4i)\sqrt{2\pi}\,\mathrm{Erfi}\Big[\frac{(1-i)\sqrt{-1+x}}{\sqrt{2}}\Big](\mathrm{Cos}[1]-i\,\mathrm{Sin}[1])-(4+i)\sqrt{2\pi}\,\mathrm{Erfi}\Big[\frac{(1+i)\sqrt{-1+x}}{\sqrt{2}}\Big](\mathrm{Cos}[1]+i\,\mathrm{Sin}[1])\Bigg)\Bigg)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\mathrm{ArcTanh}[a+b\,x]}{\frac{a\,d}{b}+d\,x},\ x,\ 6,\ 0\right\}$$

$$-\frac{\mathrm{PolyLog}[2,-a-b\,x]}{2\,d}+\frac{\mathrm{PolyLog}[2,a+b\,x]}{2\,d}$$

$$-\frac{1}{8\,d}\Bigg(\pi^2-4i\pi\,\mathrm{ArcTanh}[a+b\,x]-8\,\mathrm{ArcTanh}[a+b\,x]^2-8\,\mathrm{ArcTanh}[a+b\,x]\,\mathrm{Log}\Big[1-e^{-2\,\mathrm{ArcTanh}[a+b\,x]}\Big]+4i\pi\,\mathrm{Log}\Big[1+e^{2\,\mathrm{ArcTanh}[a+b\,x]}\Big]+8\,\mathrm{ArcTanh}[a+b\,x]\,\mathrm{Log}\Big[1+e^{2\,\mathrm{ArcTanh}[a+b\,x]}\Big]+8\,\mathrm{ArcTanh}[a+b\,x]\,\mathrm{Log}\Big[\frac{1}{\sqrt{1-(a+b\,x)^2}}\Big]-4i\pi\,\mathrm{Log}\Big[\frac{2}{\sqrt{1-(a+b\,x)^2}}\Big]-8\,\mathrm{ArcTanh}[a+b\,x]\,\mathrm{Log}\Big[\frac{2}{\sqrt{1-(a+b\,x)^2}}\Big]-8\,\mathrm{ArcTanh}[a+b\,x]\,\mathrm{Log}\Big[\frac{i(a+b\,x)}{\sqrt{1-(a+b\,x)^2}}\Big]+8\,\mathrm{ArcTanh}[a+b\,x]\,\mathrm{Log}\Big[\frac{2i(a+b\,x)}{\sqrt{1-(a+b\,x)^2}}\Big]+4\,\mathrm{PolyLog}\Big[2,e^{-2\,\mathrm{ArcTanh}[a+b\,x]}\Big]+4\,\mathrm{PolyLog}\Big[2,-e^{2\,\mathrm{ArcTanh}[a+b\,x]}\Big]\Bigg)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\mathrm{ArcTanh}[a\,x^n]}{x},\ x,\ 3,\ 0\right\}$$

$$-\frac{\mathrm{PolyLog}[2,-a\,x^n]}{2\,n}+\frac{\mathrm{PolyLog}[2,a\,x^n]}{2\,n}$$

$$\frac{a\,x^n\,\mathrm{HypergeometricPFQ}\Big[\left\{\frac{1}{2},\frac{1}{2},1\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},a^2x^{2n}\Big]}{n}$$

Problems involving inverse hyperbolic cotangents

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCoth}[a+b\,x]}{x},\ x,\ 13,\ 0\right\}$$

$$\frac{1}{2}\text{Log}[x]\,\text{Log}\Big[\frac{1-a-b\,x}{1-a}\Big]-\frac{1}{2}\text{Log}[x]\,\text{Log}\Big[\frac{1+a+b\,x}{1+a}\Big]-\frac{1}{2}\text{Log}[x]\,\text{Log}\Big[1-\frac{1}{a+b\,x}\Big]+\frac{1}{2}\text{Log}[x]\,\text{Log}\Big[1+\frac{1}{a+b\,x}\Big]+\frac{1}{2}\text{PolyLog}\Big[2,\ \frac{b\,x}{1-a}\Big]-\frac{1}{2}\text{PolyLog}\Big[2,\ -\frac{b\,x}{1+a}\Big]$$

$$(\text{ArcCoth}[a+b\,x]-\text{ArcTanh}[a+b\,x])\,\text{Log}[x]-\frac{1}{2}\,i\left(i\,(\text{ArcTanh}[a]-\text{ArcTanh}[a+b\,x])^2-\frac{1}{4}\,i\,(\pi-2\,i\,\text{ArcTanh}[a+b\,x])^2-2\,i\,(\text{ArcTanh}[a]-\text{ArcTanh}[a+b\,x])\,\text{Log}\Big[1-e^{2\,\text{ArcTanh}[a]-2\,\text{ArcTanh}[a+b\,x]}\Big]+(\pi-2\,i\,\text{ArcTanh}[a+b\,x])\,\text{Log}\Big[1+e^{2\,\text{ArcTanh}[a+b\,x]}\Big]-(\pi-2\,i\,\text{ArcTanh}[a+b\,x])\,\text{Log}\Big[\frac{2}{\sqrt{1-(a+b\,x)^2}}\Big]+2\,i\,\text{ArcTanh}[a+b\,x]\left(-\text{Log}\Big[\frac{1}{\sqrt{1-(a+b\,x)^2}}\Big]+\text{Log}[-i\,\text{Sinh}[\text{ArcTanh}[a]-\text{ArcTanh}[a+b\,x]]]\right)+2\,i\,(\text{ArcTanh}[a]-\text{ArcTanh}[a+b\,x])\,\text{Log}[-2\,i\,\text{Sinh}[\text{ArcTanh}[a]-\text{ArcTanh}[a+b\,x]]]-i\,\text{PolyLog}\Big[2,\ e^{2\,\text{ArcTanh}[a]-2\,\text{ArcTanh}[a+b\,x]}\Big]-i\,\text{PolyLog}\Big[2,\ -e^{2\,\text{ArcTanh}[a+b\,x]}\Big]\right)$$

Incorrect antiderivative:

$$\left\{x^2\,\text{ArcCoth}[a+b\,x]^2,\ x,\ 16,\ 0\right\}$$

$$\frac{a+b\,x}{3\,b^3}-\frac{\text{ArcCoth}[a+b\,x]}{3\,b^3}-\frac{2\,a\,(a+b\,x)\,\text{ArcCoth}[a+b\,x]}{b^3}+\frac{(a+b\,x)^2\,\text{ArcCoth}[a+b\,x]}{3\,b^3}+\frac{\text{ArcCoth}[a+b\,x]^2}{3\,b^3}+\frac{a\,\text{ArcCoth}[a+b\,x]^2}{b^3}+\frac{a^2\,\text{ArcCoth}[a+b\,x]^2}{b^3}+\frac{a^2\,(a+b\,x)\,\text{ArcCoth}[a+b\,x]^2}{b^3}-\frac{a\,(a+b\,x)^2\,\text{ArcCoth}[a+b\,x]^2}{b^3}+\frac{(a+b\,x)^3\,\text{ArcCoth}[a+b\,x]^2}{3\,b^3}-\frac{2\,\text{ArcCoth}[a+b\,x]\,\text{Log}\Big[\frac{2}{1-a-b\,x}\Big]}{3\,b^3}-\frac{2\,a^2\,\text{ArcCoth}[a+b\,x]\,\text{Log}\Big[\frac{2}{1-a-b\,x}\Big]}{b^3}-\frac{a\,\text{Log}\Big[1-(a+b\,x)^2\Big]}{b^3}-\frac{\left(1+3\,a^2\right)\,\text{PolyLog}\Big[2,\ 1-\frac{2}{1-a-b\,x}\Big]}{3\,b^3}$$

$$-\frac{1}{12 b^3} (a+b x) \sqrt{1-\frac{1}{(a+b x)^2}} \left(1-(a+b x)^2\right)$$

$$\left(\frac{4 \text{ArcCoth}[a+b x]}{(a+b x) \sqrt{1-\frac{1}{(a+b x)^2}}}+\frac{3 \text{ArcCoth}[a+b x]^2}{(a+b x) \sqrt{1-\frac{1}{(a+b x)^2}}}-\frac{12 a \text{ArcCoth}[a+b x]^2}{(a+b x) \sqrt{1-\frac{1}{(a+b x)^2}}}+\frac{9 a^2 \text{ArcCoth}[a+b x]^2}{(a+b x) \sqrt{1-\frac{1}{(a+b x)^2}}}+\right.$$

$$\frac{-1+6 a \text{ArcCoth}[a+b x]-3 \left(-1+a^2\right) \text{ArcCoth}[a+b x]^2}{\sqrt{1-\frac{1}{(a+b x)^2}}}+\text{Cosh}[3 \text{ArcCoth}[a+b x]]-6 a \text{ArcCoth}[a+b x]$$

$$\text{Cosh}[3 \text{ArcCoth}[a+b x]]+\text{ArcCoth}[a+b x]^2 \text{Cosh}[3 \text{ArcCoth}[a+b x]]+3 a^2 \text{ArcCoth}[a+b x]^2 \text{Cosh}[3 \text{ArcCoth}[a+b x]]+$$

$$\frac{6 \text{ArcCoth}[a+b x] \text{Log}\left[1-e^{-2 \text{ArcCoth}[a+b x]}\right]}{(a+b x) \sqrt{1-\frac{1}{(a+b x)^2}}}+\frac{18 a^2 \text{ArcCoth}[a+b x] \text{Log}\left[1-e^{-2 \text{ArcCoth}[a+b x]}\right]}{(a+b x) \sqrt{1-\frac{1}{(a+b x)^2}}}-$$

$$\frac{18 a \text{Log}\left[\frac{1}{(a+b x) \sqrt{1-\frac{1}{(a+b x)^2}}}\right]}{(a+b x) \sqrt{1-\frac{1}{(a+b x)^2}}}+\frac{4 \left(1+3 a^2\right) \text{PolyLog}\left[2, e^{-2 \text{ArcCoth}[a+b x]}\right]}{(a+b x)^3 \left(1-\frac{1}{(a+b x)^2}\right)^{3/2}}-\text{ArcCoth}[a+b x]^2 \text{Sinh}[3 \text{ArcCoth}[a+b x]]-$$

$$3 a^2 \text{ArcCoth}[a+b x]^2 \text{Sinh}[3 \text{ArcCoth}[a+b x]]-2 \text{ArcCoth}[a+b x] \text{Log}\left[1-e^{-2 \text{ArcCoth}[a+b x]}\right] \text{Sinh}[3 \text{ArcCoth}[a+b x]]-$$
$$6 a^2 \text{ArcCoth}[a+b x] \text{Log}\left[1-e^{-2 \text{ArcCoth}[a+b x]}\right] \text{Sinh}[3 \text{ArcCoth}[a+b x]]+$$

$$\left.6 a \text{Log}\left[\frac{1}{(a+b x) \sqrt{1-\frac{1}{(a+b x)^2}}}\right] \text{Sinh}[3 \text{ArcCoth}[a+b x]]\right)$$

Unable to integrate:

$$\left\{\frac{\text{ArcCoth}[a+b x]^2}{x}, x, -2, 0\right\}$$

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

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

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

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCoth}[1+x]}{2+2\,x},\ x,\ 5,\ 0\right\}$$

$$\frac{1}{4}\,\text{PolyLog}\left[2,-\frac{1}{1+x}\right]-\frac{1}{4}\,\text{PolyLog}\left[2,\frac{1}{1+x}\right]$$

$$\frac{1}{16}\left(-\pi^2+4\,i\,\pi\,\text{ArcTanh}[1+x]+8\,\text{ArcTanh}[1+x]^2+\right.$$
$$8\,\text{ArcTanh}[1+x]\,\text{Log}\left[1-e^{-2\,\text{ArcTanh}[1+x]}\right]-4\,i\,\pi\,\text{Log}\left[1+e^{2\,\text{ArcTanh}[1+x]}\right]-8\,\text{ArcTanh}[1+x]\,\text{Log}\left[1+e^{2\,\text{ArcTanh}[1+x]}\right]+$$
$$8\,\text{ArcCoth}[1+x]\,\text{Log}[1+x]-8\,\text{ArcTanh}[1+x]\,\text{Log}[1+x]-8\,\text{ArcTanh}[1+x]\,\text{Log}\left[\frac{1}{\sqrt{-x\,(2+x)}}\right]+$$
$$4\,i\,\pi\,\text{Log}\left[\frac{2}{\sqrt{-x\,(2+x)}}\right]+8\,\text{ArcTanh}[1+x]\,\text{Log}\left[\frac{2}{\sqrt{-x\,(2+x)}}\right]+8\,\text{ArcTanh}[1+x]\,\text{Log}\left[\frac{i\,(1+x)}{\sqrt{-x\,(2+x)}}\right]-$$
$$\left.8\,\text{ArcTanh}[1+x]\,\text{Log}\left[\frac{2\,i\,(1+x)}{\sqrt{-x\,(2+x)}}\right]-4\,\text{PolyLog}\left[2,e^{-2\,\text{ArcTanh}[1+x]}\right]-4\,\text{PolyLog}\left[2,-e^{2\,\text{ArcTanh}[1+x]}\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCoth}[x]}{a+b\,x},\ x,\ 14,\ 0\right\}$$

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

$$\frac{1}{8\,b}\left(-\pi^2+4\,\text{ArcTanh}\left[\frac{a}{b}\right]^2+4\,i\,\pi\,\text{ArcTanh}[x]+8\,\text{ArcTanh}\left[\frac{a}{b}\right]\,\text{ArcTanh}[x]+8\,\text{ArcTanh}[x]^2-\right.$$
$$4\,i\,\pi\,\text{Log}\left[1+e^{2\,\text{ArcTanh}[x]}\right]-8\,\text{ArcTanh}[x]\,\text{Log}\left[1+e^{2\,\text{ArcTanh}[x]}\right]+8\,\text{ArcTanh}\left[\frac{a}{b}\right]\,\text{Log}\left[1-e^{-2\left(\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right)}\right]+$$
$$8\,\text{ArcTanh}[x]\,\text{Log}\left[1-e^{-2\left(\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right)}\right]+8\,\text{ArcCoth}[x]\,\text{Log}[a+b\,x]-8\,\text{ArcTanh}[x]\,\text{Log}[a+b\,x]+$$
$$4\,i\,\pi\,\text{Log}\left[\frac{2}{\sqrt{1-x^2}}\right]+8\,\text{ArcTanh}[x]\,\text{Log}\left[\frac{2}{\sqrt{1-x^2}}\right]+4\,\text{ArcTanh}[x]\,\text{Log}\left[1-x^2\right]+$$
$$8\,\text{ArcTanh}[x]\,\text{Log}\left[i\,\text{Sinh}\left[\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right]\right]-8\,\text{ArcTanh}\left[\frac{a}{b}\right]\,\text{Log}\left[2\,i\,\text{Sinh}\left[\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right]\right]-$$
$$\left.8\,\text{ArcTanh}[x]\,\text{Log}\left[2\,i\,\text{Sinh}\left[\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right]\right]-4\,\text{PolyLog}\left[2,-e^{2\,\text{ArcTanh}[x]}\right]-4\,\text{PolyLog}\left[2,e^{-2\left(\text{ArcTanh}\left[\frac{a}{b}\right]+\text{ArcTanh}[x]\right)}\right]\right)$$

Unable to integrate:

$$\left\{\frac{\text{ArcCoth}[x]}{a+b\,x+c\,x^2},\ x,\ 29,\ 0\right\}$$

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

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

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

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

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

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

Unable to integrate:

$$\left\{\frac{\text{ArcCoth}[d+e\,x]}{a+b\,x^2},\,x,\,27,\,0\right\}$$

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

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

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

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

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

Unable to integrate:

$$\left\{\frac{\text{ArcCoth}[d+e\,x]}{a+b\,x+c\,x^2},\,x,\,27,\,0\right\}$$

$$\frac{\text{Log}\left[b-\sqrt{b^2-4ac}+2cx\right]\text{Log}\left[\frac{2c(1-d-ex)}{2c(1-d)+\left(b-\sqrt{b^2-4ac}\right)e}\right]}{2\sqrt{b^2-4ac}}-\frac{\text{Log}\left[b+\sqrt{b^2-4ac}+2cx\right]\text{Log}\left[\frac{2c(1-d-ex)}{2c(1-d)+\left(b+\sqrt{b^2-4ac}\right)e}\right]}{2\sqrt{b^2-4ac}}-$$

$$\frac{\text{Log}\left[b-\sqrt{b^2-4ac}+2cx\right]\text{Log}\left[\frac{2c(1+d+ex)}{2c(1+d)-\left(b-\sqrt{b^2-4ac}\right)e}\right]}{2\sqrt{b^2-4ac}}+\frac{\text{Log}\left[b+\sqrt{b^2-4ac}+2cx\right]\text{Log}\left[\frac{2c(1+d+ex)}{2c(1+d)-\left(b+\sqrt{b^2-4ac}\right)e}\right]}{2\sqrt{b^2-4ac}}-$$

$$\frac{\text{Log}\left[b-\sqrt{b^2-4ac}+2cx\right]\text{Log}\left[1-\frac{1}{d+ex}\right]}{2\sqrt{b^2-4ac}}+\frac{\text{Log}\left[b+\sqrt{b^2-4ac}+2cx\right]\text{Log}\left[1-\frac{1}{d+ex}\right]}{2\sqrt{b^2-4ac}}+$$

$$\frac{\text{Log}\left[b-\sqrt{b^2-4ac}+2cx\right]\text{Log}\left[1+\frac{1}{d+ex}\right]}{2\sqrt{b^2-4ac}}-\frac{\text{Log}\left[b+\sqrt{b^2-4ac}+2cx\right]\text{Log}\left[1+\frac{1}{d+ex}\right]}{2\sqrt{b^2-4ac}}-\frac{\text{PolyLog}\left[2,-\frac{e\left(b-\sqrt{b^2-4ac}+2cx\right)}{2c(1+d)-\left(b-\sqrt{b^2-4ac}\right)e}\right]}{2\sqrt{b^2-4ac}}+$$

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

$$\int\frac{\text{ArcCoth}[d+ex]}{a+bx+cx^2}\,dx$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCoth}[x]}{\left(a+bx^2\right)^{3/2}},x,3,0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCoth}[x]}{\left(a+bx^2\right)^{5/2}},x,8,0\right\}$$

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

$$\frac{1}{6\,a^2}\left(\frac{2\,a}{(a+b)\,\sqrt{a+b\,x^2}}+\frac{2\,x\,\left(3\,a+2\,b\,x^2\right)\,\text{ArcCoth}[x]}{\left(a+b\,x^2\right)^{3/2}}+\right.$$

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

$$\left.\frac{(3\,a+2\,b)\,\text{Log}\left[12\,a^2\,(a+b)\,\left(a-b\,x+\sqrt{a+b}\,\sqrt{a+b\,x^2}\right)\right]}{(a+b)^{3/2}}-\frac{(3\,a+2\,b)\,\text{Log}\left[12\,a^2\,(a+b)\,\left(a+b\,x+\sqrt{a+b}\,\sqrt{a+b\,x^2}\right)\right]}{(a+b)^{3/2}}\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCoth}[x]}{\left(a+b\,x^2\right)^{7/2}},\,x,\,8,\,0\right\}$$

$$\frac{1}{15\,a\,(a+b)\,\left(a+b\,x^2\right)^{3/2}}+\frac{7\,a+4\,b}{15\,a^2\,(a+b)^2\,\sqrt{a+b\,x^2}}+$$

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

$$\frac{1}{30\,a^3}\left(\frac{2\,a\,\left(8\,a^2+4\,b^2\,x^2+a\,b\,\left(5+7\,x^2\right)\right)}{(a+b)^2\,\left(a+b\,x^2\right)^{3/2}}+\right.$$

$$\frac{2\,x\,\left(15\,a^2+20\,a\,b\,x^2+8\,b^2\,x^4\right)\,\text{ArcCoth}[x]}{\left(a+b\,x^2\right)^{5/2}}+\frac{\left(15\,a^2+20\,a\,b+8\,b^2\right)\,\text{Log}\left[\sqrt{a+b}\,\left(15\,a^2+20\,a\,b+8\,b^2\right)\,(-1+x)\right]}{(a+b)^{5/2}}+$$

$$\frac{\left(15\,a^2+20\,a\,b+8\,b^2\right)\,\text{Log}\left[\sqrt{a+b}\,\left(15\,a^2+20\,a\,b+8\,b^2\right)\,(1+x)\right]}{(a+b)^{5/2}}-$$

$$\frac{\left(15\,a^2+20\,a\,b+8\,b^2\right)\,\text{Log}\left[60\,a^3\,(a+b)^2\,\left(a-b\,x+\sqrt{a+b}\,\sqrt{a+b\,x^2}\right)\right]}{(a+b)^{5/2}}-$$

$$\left.\frac{\left(15\,a^2+20\,a\,b+8\,b^2\right)\,\text{Log}\left[60\,a^3\,(a+b)^2\,\left(a+b\,x+\sqrt{a+b}\,\sqrt{a+b\,x^2}\right)\right]}{(a+b)^{5/2}}\right)$$

Valid but unnecessarily complicated antiderivative:

$$\{\text{ArcCoth}[b\,\text{Tanh}[x]],\,x,\,12,\,0\}$$

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

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

$$
\begin{aligned}
&x\,\mathrm{ArcCoth}[b\,\mathrm{Tanh}[x]]-\frac{1}{4\sqrt{-b^2}}\,b\,\Bigg(-4\,x\,\mathrm{ArcTan}\Big[\frac{\mathrm{Coth}[x]}{\sqrt{-b^2}}\Big]+2\,i\,\mathrm{ArcCos}\Big[\frac{1+b^2}{-1+b^2}\Big]\,\mathrm{ArcTan}\Big[\sqrt{-b^2}\,\mathrm{Tanh}[x]\Big]+\\
&\quad\Bigg(\mathrm{ArcCos}\Big[\frac{1+b^2}{-1+b^2}\Big]-2\,\Bigg(\mathrm{ArcTan}\Big[\frac{\mathrm{Coth}[x]}{\sqrt{-b^2}}\Big]+\mathrm{ArcTan}\Big[\sqrt{-b^2}\,\mathrm{Tanh}[x]\Big]\Bigg)\Bigg)\,\mathrm{Log}\Big[\frac{\sqrt{2}\,\sqrt{-b^2}\,e^{-x}}{\sqrt{-1+b^2}\,\sqrt{-1-b^2+\left(-1+b^2\right)\mathrm{Cosh}[2\,x]}}\Big]+\\
&\quad\Bigg(\mathrm{ArcCos}\Big[\frac{1+b^2}{-1+b^2}\Big]+2\,\Bigg(\mathrm{ArcTan}\Big[\frac{\mathrm{Coth}[x]}{\sqrt{-b^2}}\Big]+\mathrm{ArcTan}\Big[\sqrt{-b^2}\,\mathrm{Tanh}[x]\Big]\Bigg)\Bigg)\,\mathrm{Log}\Big[\frac{\sqrt{2}\,\sqrt{-b^2}\,e^{x}}{\sqrt{-1+b^2}\,\sqrt{-1-b^2+\left(-1+b^2\right)\mathrm{Cosh}[2\,x]}}\Big]-\\
&\quad\Bigg(\mathrm{ArcCos}\Big[\frac{1+b^2}{-1+b^2}\Big]-2\,\mathrm{ArcTan}\Big[\sqrt{-b^2}\,\mathrm{Tanh}[x]\Big]\Bigg)\,\Bigg(\mathrm{Log}[2]+\mathrm{Log}\Big[-\frac{\left(i\,b^2+\sqrt{-b^2}\right)(-1+\mathrm{Tanh}[x])}{\left(-1+b^2\right)\left(i+\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}\Big]\Bigg)-\\
&\quad\Bigg(\mathrm{ArcCos}\Big[\frac{1+b^2}{-1+b^2}\Big]+2\,\mathrm{ArcTan}\Big[\sqrt{-b^2}\,\mathrm{Tanh}[x]\Big]\Bigg)\,\Bigg(\mathrm{Log}[2]+\mathrm{Log}\Big[-\frac{\left(-i\,b^2+\sqrt{-b^2}\right)(1+\mathrm{Tanh}[x])}{\left(-1+b^2\right)\left(i+\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}\Big]\Bigg)+\\
&\quad i\,\Bigg(-\mathrm{PolyLog}\Big[2,\ \frac{\left(1+b^2-2\,i\,\sqrt{-b^2}\right)\left(-i+\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}{\left(-1+b^2\right)\left(i+\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}\Big]+\mathrm{PolyLog}\Big[2,\ \frac{\left(1+b^2+2\,i\,\sqrt{-b^2}\right)\left(-i+\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}{\left(-1+b^2\right)\left(i+\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}\Big]\Bigg)\Bigg)
\end{aligned}
$$

Valid but unnecessarily complicated antiderivative:

{ArcCoth[b Coth[x]], x, 12, 0}

$$
\begin{aligned}
&x\,\mathrm{ArcCoth}[b\,\mathrm{Coth}[x]]-\frac{1}{2}\,x\,\mathrm{Log}\Big[1-\frac{\left(1-b^2\right)e^{2\,x}}{1-2\,b+b^2}\Big]+\\
&\frac{1}{2}\,x\,\mathrm{Log}\Big[1-\frac{\left(1-b^2\right)e^{2\,x}}{1+2\,b+b^2}\Big]-\frac{1}{4}\,\mathrm{PolyLog}\Big[2,\ \frac{\left(1-b^2\right)e^{2\,x}}{1-2\,b+b^2}\Big]+\frac{1}{4}\,\mathrm{PolyLog}\Big[2,\ \frac{\left(1-b^2\right)e^{2\,x}}{1+2\,b+b^2}\Big]
\end{aligned}
$$

$$
\begin{aligned}
&x\,\mathrm{ArcCoth}[b\,\mathrm{Coth}[x]]+\frac{1}{4\sqrt{-b^2}}\,b\,\Bigg(-4\,x\,\mathrm{ArcTan}\Big[\sqrt{-b^2}\,\mathrm{Coth}[x]\Big]+2\,i\,\mathrm{ArcCos}\Big[\frac{1+b^2}{1-b^2}\Big]\,\mathrm{ArcTan}\Big[\frac{\mathrm{Tanh}[x]}{\sqrt{-b^2}}\Big]+\\
&\quad\Bigg(\mathrm{ArcCos}\Big[\frac{1+b^2}{1-b^2}\Big]-2\,\Bigg(\mathrm{ArcTan}\Big[\sqrt{-b^2}\,\mathrm{Coth}[x]\Big]+\mathrm{ArcTan}\Big[\frac{\mathrm{Tanh}[x]}{\sqrt{-b^2}}\Big]\Bigg)\Bigg)\,\mathrm{Log}\Big[\frac{\sqrt{2}\,\sqrt{-b^2}\,e^{-x}}{\sqrt{-1+b^2}\,\sqrt{1+b^2+\left(-1+b^2\right)\mathrm{Cosh}[2\,x]}}\Big]+\\
&\quad\Bigg(\mathrm{ArcCos}\Big[\frac{1+b^2}{1-b^2}\Big]+2\,\Bigg(\mathrm{ArcTan}\Big[\sqrt{-b^2}\,\mathrm{Coth}[x]\Big]+\mathrm{ArcTan}\Big[\frac{\mathrm{Tanh}[x]}{\sqrt{-b^2}}\Big]\Bigg)\Bigg)\,\mathrm{Log}\Big[\frac{\sqrt{2}\,\sqrt{-b^2}\,e^{x}}{\sqrt{-1+b^2}\,\sqrt{1+b^2+\left(-1+b^2\right)\mathrm{Cosh}[2\,x]}}\Big]-\\
&\quad\Bigg(\mathrm{ArcCos}\Big[\frac{1+b^2}{1-b^2}\Big]-2\,\mathrm{ArcTan}\Big[\frac{\mathrm{Tanh}[x]}{\sqrt{-b^2}}\Big]\Bigg)\,\Bigg(\mathrm{Log}[2]+\mathrm{Log}\Big[\frac{b^2\left(1+i\,\sqrt{-b^2}\right)(-1+\mathrm{Tanh}[x])}{\left(-1+b^2\right)\left(b^2+i\,\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}\Big]\Bigg)-\\
&\quad\Bigg(\mathrm{ArcCos}\Big[\frac{1+b^2}{1-b^2}\Big]+2\,\mathrm{ArcTan}\Big[\frac{\mathrm{Tanh}[x]}{\sqrt{-b^2}}\Big]\Bigg)\,\mathrm{Log}\Big[\frac{2\,b^2\left(i+\sqrt{-b^2}\right)(1+\mathrm{Tanh}[x])}{\left(-1+b^2\right)\left(-i\,b^2+\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}\Big]+\\
&\quad i\,\Bigg(\mathrm{PolyLog}\Big[2,\ \frac{\left(1+b^2-2\,i\,\sqrt{-b^2}\right)\left(b^2-i\,\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}{\left(-1+b^2\right)\left(b^2+i\,\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}\Big]-\mathrm{PolyLog}\Big[2,\ \frac{\left(1+b^2+2\,i\,\sqrt{-b^2}\right)\left(b^2-i\,\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}{\left(-1+b^2\right)\left(b^2+i\,\sqrt{-b^2}\,\mathrm{Tanh}[x]\right)}\Big]\Bigg)\Bigg)
\end{aligned}
$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{2\,\text{ArcCoth}[x]}}{x},\ x,\ 5,\ 0\right\}$$

$$2\,\text{Log}[1-x]-\text{Log}[x]$$

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{\frac{\text{ArcCoth}[x]}{2}}}{x},\ x,\ 13,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{\frac{\text{ArcCoth}[x]}{2}}}{x^2},\ x,\ 10,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{\frac{\text{ArcCoth}[x]}{2}}}{x^3},\ x,\ 13,\ 0\right\}$$

$$\frac{e^{\frac{\text{ArcCoth}[x]}{2}}\,(1-x)^2}{6\,x^2}+\frac{2\,e^{\frac{5\,\text{ArcCoth}[x]}{2}}\,(1-x)^2}{3\,x^2}+\frac{e^{\frac{\text{ArcCoth}[x]}{2}}\,(1-x)}{12\,x}+\frac{\text{ArcTan}\left[1-\sqrt{2}\,e^{\frac{\text{ArcCoth}[x]}{2}}\right]}{4\sqrt{2}}- \frac{\text{ArcTan}\left[1+\sqrt{2}\,e^{\frac{\text{ArcCoth}[x]}{2}}\right]}{4\sqrt{2}}+\frac{\text{Log}\left[1-\sqrt{2}\,e^{\frac{\text{ArcCoth}[x]}{2}}+e^{\text{ArcCoth}[x]}\right]}{8\sqrt{2}}-\frac{\text{Log}\left[1+\sqrt{2}\,e^{\frac{\text{ArcCoth}[x]}{2}}+e^{\text{ArcCoth}[x]}\right]}{8\sqrt{2}}$$

$$-\frac{2\,e^{\frac{\text{ArcCoth}[x]}{2}}}{\left(1+e^{2\,\text{ArcCoth}[x]}\right)^2}+\frac{5\,e^{\frac{\text{ArcCoth}[x]}{2}}}{2\left(1+e^{2\,\text{ArcCoth}[x]}\right)}-\frac{1}{16}\,\text{RootSum}\left[1+\#1^4\,\&,\ \frac{-\text{ArcCoth}[x]+2\,\text{Log}\left[-e^{\frac{\text{ArcCoth}[x]}{2}}+\#1\right]}{\#1^3}\,\&\right]$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{\text{ArcCoth}[x]}}{1-x},\ x,\ 7,\ 0\right\}$$

$$2\,e^{\text{ArcCoth}[x]}-2\,\text{ArcTanh}\left[e^{\text{ArcCoth}[x]}\right]$$

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{\text{ArcCoth}[x]}}{(1-x)^2},\ x,\ 5,\ 0\right\}$$

$$-\frac{1}{3}\,e^{3\,\text{ArcCoth}[x]}$$

$$-\frac{\sqrt{1-\frac{1}{x^2}}\;x\,(1+x)}{3\,(-1+x)^2}$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{\text{ArcCoth}[x]}}{1+x},\ x,\ 5,\ 0\right\}$$

$$2\,\text{ArcTanh}\left[e^{\text{ArcCoth}[x]}\right]$$

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{\text{ArcCoth}[x]}}{(1+x)^2},\ x,\ 4,\ 0\right\}$$

$$e^{-\text{ArcCoth}[x]}$$

$$\frac{\sqrt{1-\frac{1}{x^2}}\;x}{1+x}$$

Valid but unnecessarily complicated antiderivative:

$$\left\{e^{\text{ArcCoth}[x]}\sqrt{1-\frac{1}{x^2}},\ x,\ 3,\ 0\right\}$$

$$x+\text{Log}[x]$$

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

Valid but unnecessarily complicated antiderivative:

$$\left\{e^{\text{ArcCoth}[x]}\left(1-\frac{1}{x^2}\right)^{3/2},\ x,\ 3,\ 0\right\}$$

$$\frac{1}{2\,x^2}+\frac{1}{x}+x+\text{Log}[x]$$

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

Valid but unnecessarily complicated antiderivative:

$$\left\{e^{\text{ArcCoth}[x]}\left(1-\frac{1}{x^2}\right)^{5/2},\ x,\ 3,\ 0\right\}$$

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

$$\frac{1}{3\left(-1+e^{2\,\text{ArcCoth}[x]}\right)\left(1+e^{2\,\text{ArcCoth}[x]}\right)^4}\left(16+54\,e^{2\,\text{ArcCoth}[x]}+50\,e^{4\,\text{ArcCoth}[x]}-18\,e^{6\,\text{ArcCoth}[x]}-6\,e^{8\,\text{ArcCoth}[x]}-\right.$$
$$\left.3\left(-1+e^{2\,\text{ArcCoth}[x]}\right)\left(1+e^{2\,\text{ArcCoth}[x]}\right)^4\text{Log}\left[1-e^{2\,\text{ArcCoth}[x]}\right]+3\left(-1+e^{2\,\text{ArcCoth}[x]}\right)\left(1+e^{2\,\text{ArcCoth}[x]}\right)^4\text{Log}\left[1+e^{2\,\text{ArcCoth}[x]}\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{\text{ArcCoth}[x]}}{\sqrt{1-\frac{1}{x^2}}},\ x,\ 4,\ 0\right\}$$

$$x+\text{Log}[1-x]$$

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCoth}[a+b\,x]}{\frac{a\,d}{b}+d\,x},\ x,\ 6,\ 0\right\}$$

$$\frac{\text{PolyLog}\left[2,-\frac{1}{a+b\,x}\right]}{2\,d}-\frac{\text{PolyLog}\left[2,\frac{1}{a+b\,x}\right]}{2\,d}$$

$$-\frac{1}{8\,d}\left(\pi^2-4\,i\,\pi\,\text{ArcTanh}[a+b\,x]-8\,\text{ArcTanh}[a+b\,x]^2-8\,\text{ArcTanh}[a+b\,x]\,\text{Log}\left[1-e^{-2\,\text{ArcTanh}[a+b\,x]}\right]+\right.$$
$$4\,i\,\pi\,\text{Log}\left[1+e^{2\,\text{ArcTanh}[a+b\,x]}\right]+8\,\text{ArcTanh}[a+b\,x]\,\text{Log}\left[1+e^{2\,\text{ArcTanh}[a+b\,x]}\right]-8\,\text{ArcCoth}[a+b\,x]\,\text{Log}[a+b\,x]+$$
$$8\,\text{ArcTanh}[a+b\,x]\,\text{Log}[a+b\,x]+8\,\text{ArcTanh}[a+b\,x]\,\text{Log}\left[\frac{1}{\sqrt{1-(a+b\,x)^2}}\right]-4\,i\,\pi\,\text{Log}\left[\frac{2}{\sqrt{1-(a+b\,x)^2}}\right]-$$
$$8\,\text{ArcTanh}[a+b\,x]\,\text{Log}\left[\frac{2}{\sqrt{1-(a+b\,x)^2}}\right]-8\,\text{ArcTanh}[a+b\,x]\,\text{Log}\left[\frac{i\,(a+b\,x)}{\sqrt{1-(a+b\,x)^2}}\right]+$$
$$\left.8\,\text{ArcTanh}[a+b\,x]\,\text{Log}\left[\frac{2\,i\,(a+b\,x)}{\sqrt{1-(a+b\,x)^2}}\right]+4\,\text{PolyLog}\left[2,e^{-2\,\text{ArcTanh}[a+b\,x]}\right]+4\,\text{PolyLog}\left[2,-e^{2\,\text{ArcTanh}[a+b\,x]}\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCoth}[a\,x^n]}{x},\ x,\ 3,\ 0\right\}$$

$$\frac{\text{PolyLog}\left[2,-\frac{x^{-n}}{a}\right]}{2\,n}-\frac{\text{PolyLog}\left[2,\frac{x^{-n}}{a}\right]}{2\,n}$$

$$\frac{a\, x^n\, \text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\, \frac{1}{2},\, 1\right\},\, \left\{\frac{3}{2},\, \frac{3}{2}\right\},\, a^2\, x^{2\, n}\right]}{n} + (\text{ArcCoth}[a\, x^n] - \text{ArcTanh}[a\, x^n])\, \text{Log}[x]$$

Problems involving inverse hyperbolic secants

Incorrect antiderivative:

{ArcSech[a x], x, 1, 0}

$$x\,\text{ArcSech}[a\,x]-\frac{2\,\text{ArcTan}\left[\sqrt{\frac{1-a\,x}{1+a\,x}}\right]}{a}$$

$$x\,\text{ArcSech}[a\,x]+\frac{2\sqrt{\frac{1-a\,x}{1+a\,x}}\ \sqrt{1-a^2\,x^2}\ \text{ArcSin}\left[\frac{\sqrt{1+a\,x}}{\sqrt{2}}\right]}{a-a^2\,x}$$

Unable to integrate:

$\{\text{ArcSech}[c\,e^{a+b\,x}],\ x,\ 7,\ 0\}$

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

$$\int\text{ArcSech}\left[c\,e^{a+b\,x}\right]\,dx$$

Valid but unnecessarily complicated antiderivative:

$\left\{\frac{\text{ArcSech}[a\,x^n]}{x},\ x,\ 7,\ 0\right\}$

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

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

Problems involving inverse hyperbolic cosecants

Valid but unnecessarily complicated antiderivative:

$$\left\{\text{ArcCsch}\left[c\, e^{a+b x}\right],\ x,\ 7,\ 0\right\}$$

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

$$x\, \text{ArcCsch}\left[c\, e^{a+b x}\right]+\frac{1}{8 b c \sqrt{1+\frac{e^{-2 (a+b x)}}{c^2}}} e^{-a-b x} \sqrt{1+c^2 e^{2 (a+b x)}} \left(\text{Log}\left[-c^2 e^{2 (a+b x)}\right]^2+\text{ArcTanh}\left[\sqrt{1+c^2 e^{2 (a+b x)}}\right] \left(-8 b x+4\, \text{Log}\left[-c^2 e^{2 (a+b x)}\right]\right)-4\, \text{Log}\left[-c^2 e^{2 (a+b x)}\right] \text{Log}\left[\frac{1}{2} \left(1+\sqrt{1+c^2 e^{2 (a+b x)}}\right)\right]+2\, \text{Log}\left[\frac{1}{2} \left(1+\sqrt{1+c^2 e^{2 (a+b x)}}\right)\right]^2-4\, \text{PolyLog}\left[2,\ \frac{1}{2} \left(1-\sqrt{1+c^2 e^{2 (a+b x)}}\right)\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCsch}\left[a\, x^n\right]}{x},\ x,\ 7,\ 0\right\}$$

$$\frac{\text{ArcCsch}\left[a\, x^n\right]^2}{2 n}-\frac{\text{ArcCsch}\left[a\, x^n\right] \text{Log}\left[1-e^{2\, \text{ArcCsch}\left[a\, x^n\right]}\right]}{n}-\frac{\text{PolyLog}\left[2,\ e^{2\, \text{ArcCsch}\left[a\, x^n\right]}\right]}{2 n}$$

$$-\frac{x^{-n}\, \text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\ \frac{1}{2},\ \frac{1}{2}\right\},\ \left\{\frac{3}{2},\ \frac{3}{2}\right\},\ -\frac{x^{-2 n}}{a^2}\right]}{a n}+\left(\text{ArcCsch}\left[a\, x^n\right]-\text{ArcSinh}\left[\frac{x^{-n}}{a}\right]\right) \text{Log}[x]$$