Rubi 4.16.0.4 Integration Test Results

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

Test results for the 502 problems in "6.1.1 (c+d x)^m (a+b sinh)^n.m"

Test results for the 102 problems in "6.1.3 (e x)^m (a+b sinh(c+d x^n))^p.m"

Test results for the 33 problems in "6.1.4 (d+e x)^m sinh(a+b x+c x^2)^n.m"

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

Test results for the 525 problems in "6.1.7 hyper^m (a+b sinh^n)^p.m"

Test results for the 183 problems in "6.2.1 (c+d x)^m (a+b cosh)^n.m"

Test results for the 111 problems in "6.2.2 (e x)^m (a+b x^n)^p cosh.m"

Test results for the 68 problems in "6.2.3 (e x)^m (a+b cosh(c+d x^n))^p.m"

Test results for the 33 problems in "6.2.4 (d+e x)^m cosh(a+b x+c x^2)^n.m"

Test results for the 336 problems in "6.2.5 Hyperbolic cosine functions.m"

Test results for the 85 problems in "6.2.7 hyper^m (a+b cosh^n)^p.m"

Test results for the 77 problems in "6.3.1 (c+d x)^m (a+b tanh)^n.m"

Problem 16: Unable to integrate problem.

$$\int (c + d\,x)\,\left(b\,\text{Tanh}[e + f\,x]\right)^{5/2}\,dx$$

Optimal (type 4, 1392 leaves, 44 steps) :

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

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

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

$$\frac{b^{5/2}\,d\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{b}}\right]\,\text{Log}\left[\frac{2\,\sqrt{b}\,\left(\sqrt{-b}\,+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}\,+\sqrt{b}\right)\left(\sqrt{b}\,+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}\right]}{2\,f^2} + \frac{(-b)^{5/2}\,d\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{f^2} -$$

$$\frac{(-b)^{5/2}\,d\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[\frac{2\,\left(\sqrt{b}\,-\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}\,+\sqrt{b}\right)\left(1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right)}\right]}{2\,f^2} - \frac{(-b)^{5/2}\,d\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[-\frac{2\,\left(\sqrt{b}\,+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}\,-\sqrt{b}\right)\left(1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right)}\right]}{2\,f^2} -$$

$$\frac{(-b)^{5/2}\,d\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[\frac{2}{1+\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{f^2} - \frac{b^{5/2}\,d\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{b}}{\sqrt{b}\,-\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{2\,f^2} - \frac{b^{5/2}\,d\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{b}}{\sqrt{b}\,+\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{2\,f^2} +$$

$$\frac{b^{5/2}\,d\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{b}\,\left(\sqrt{-b}\,-\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}\,-\sqrt{b}\right)\left(\sqrt{b}\,+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}\right]}{4\,f^2} + \frac{b^{5/2}\,d\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{b}\,\left(\sqrt{-b}\,+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}\,+\sqrt{b}\right)\left(\sqrt{b}\,+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}\right]}{4\,f^2} +$$

$$\frac{(-b)^{5/2}\,d\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{2\,f^2} - \frac{(-b)^{5/2}\,d\,\text{PolyLog}\left[2,\,1-\frac{2\,\left(\sqrt{b}\,-\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}\,+\sqrt{b}\right)\left(1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right)}\right]}{4\,f^2} - \frac{(-b)^{5/2}\,d\,\text{PolyLog}\left[2,\,1+\frac{2\,\left(\sqrt{b}\,+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}\,-\sqrt{b}\right)\left(1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right)}\right]}{4\,f^2} +$$

$$\frac{(-b)^{5/2}\,d\,\text{PolyLog}\left[2,\,1-\frac{2}{1+\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{2\,f^2} - \frac{4\,b^2\,d\,\sqrt{b\,\text{Tanh}[e+f\,x]}}{3\,f^2} - \frac{2\,b\,(c+d\,x)\,(b\,\text{Tanh}[e+f\,x])^{3/2}}{3\,f}$$

Result (type 8, 137 leaves, 7 steps) :

$$\frac{2\,b^{5/2}\,d\,\text{ArcTan}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{b}}\right]}{3\,f^2} + \frac{2\,b^{5/2}\,d\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{b}}\right]}{3\,f^2} -$$

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

Problem 17: Unable to integrate problem.

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

Optimal (type 4, 1363 leaves, 43 steps) :

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

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

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

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

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

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

$$\frac{b^{3/2}\,d\,\text{PolyLog}\left[2,1-\frac{2\sqrt{b}}{\sqrt{b}-\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{2\,f^2}-\frac{b^{3/2}\,d\,\text{PolyLog}\left[2,1-\frac{2\sqrt{b}}{\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{2\,f^2}+\frac{b^{3/2}\,d\,\text{PolyLog}\left[2,1-\frac{2\sqrt{b}\,\left(\sqrt{-b}-\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}-\sqrt{b}\right)\left(\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}\right]}{4\,f^2}+$$

$$\frac{b^{3/2}\,d\,\text{PolyLog}\left[2,1-\frac{2\sqrt{b}\,\left(\sqrt{-b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}+\sqrt{b}\right)\left(\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}\right]}{4\,f^2}+\frac{(-b)^{3/2}\,d\,\text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{2\,f^2}-\frac{(-b)^{3/2}\,d\,\text{PolyLog}\left[2,1-\frac{2\left(\sqrt{b}-\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}+\sqrt{b}\right)\left(1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right)}\right]}{4\,f^2}-$$

$$\frac{(-b)^{3/2}\,d\,\text{PolyLog}\left[2,1+\frac{2\left(\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}-\sqrt{b}\right)\left(1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right)}\right]}{4\,f^2}+\frac{(-b)^{3/2}\,d\,\text{PolyLog}\left[2,1-\frac{2}{1+\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{2\,f^2}-\frac{2\,b\,(c+d\,x)\,\sqrt{b\,\text{Tanh}[e+f\,x]}}{f}$$

Result (type 8, 108 leaves, 6 steps) :

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

Problem 18: Unable to integrate problem.

$$\int (c + d \, x) \, \sqrt{b \, \text{Tanh}[e + f \, x]} \, dx$$

Optimal (type 4, 1280 leaves, 37 steps) :

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

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

$$\frac{\sqrt{b}\ d\ \text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{b}}\right]\,\text{Log}\left[\frac{2\,\sqrt{b}}{\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{f^2} - \frac{\sqrt{b}\ d\ \text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{b}}\right]\,\text{Log}\left[\frac{2\,\sqrt{b}\,\left(\sqrt{-b}-\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}-\sqrt{b}\right)\left(\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}\right]}{2\,f^2} -$$

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

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

$$\frac{\sqrt{-b}\ d\ \text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[\frac{2}{1+\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{f^2} - \frac{\sqrt{b}\ d\ \text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{b}}{\sqrt{b}-\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{2\,f^2} - \frac{\sqrt{b}\ d\ \text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{b}}{\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{2\,f^2} +$$

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

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

Result (type 8, 20 leaves, 0 steps) :

$$\text{Unintegrable}\left[(c+d\,x)\ \sqrt{b\,\text{Tanh}[e+f\,x]},\,x\right]$$

Problem 19: Unable to integrate problem.

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

Optimal (type 4, 1280 leaves, 37 steps):

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

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

$$\frac{d\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{b}}\right]\,\text{Log}\left[\frac{2\,\sqrt{b}}{\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{\sqrt{b}\,f^2}-\frac{d\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{b}}\right]\,\text{Log}\left[\frac{2\,\sqrt{b}\,\left(\sqrt{-b}-\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}-\sqrt{b}\right)\,\left(\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}\right]}{2\,\sqrt{b}\,f^2}-$$

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

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

$$\frac{d\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[\frac{2}{1+\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{\sqrt{-b}\,f^2}-\frac{d\,\text{PolyLog}\left[2,1-\frac{2\,\sqrt{b}}{\sqrt{b}-\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{2\,\sqrt{b}\,f^2}-\frac{d\,\text{PolyLog}\left[2,1-\frac{2\,\sqrt{b}}{\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{2\,\sqrt{b}\,f^2}+$$

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

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

Result (type 8, 20 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{c+d\,x}{\sqrt{b\,\text{Tanh}[e+f\,x]}},x\right]$$

Problem 20: Unable to integrate problem.

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

Optimal (type 4, 1365 leaves, 43 steps) :

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

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

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

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

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

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

$$\frac{d\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{b}\,\left(\sqrt{-b}-\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}-\sqrt{b}\right)\,\left(\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}\right]}{4\,b^{3/2}\,f^2} + \frac{d\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{b}\,\left(\sqrt{-b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}+\sqrt{b}\right)\,\left(\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}\right]}{4\,b^{3/2}\,f^2} + \frac{d\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{2\,(-b)^{3/2}\,f^2} - $$

$$\frac{d\,\text{PolyLog}\left[2,\,1-\frac{2\,\left(\sqrt{b}-\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}+\sqrt{b}\right)\,\left(1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right)}\right]}{4\,(-b)^{3/2}\,f^2} - \frac{d\,\text{PolyLog}\left[2,\,1+\frac{2\,\left(\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}-\sqrt{b}\right)\,\left(1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right)}\right]}{4\,(-b)^{3/2}\,f^2} + \frac{d\,\text{PolyLog}\left[2,\,1-\frac{2}{1+\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{2\,(-b)^{3/2}\,f^2} - \frac{2\,(c+d\,x)}{b\,f\,\sqrt{b\,\text{Tanh}[e+f\,x]}}$$

Result (type 8, 110 leaves, 6 steps) :

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

Problem 21: Result valid but suboptimal antiderivative.

$$\int (c+d\,x)^2\,\left(b\,\text{Tanh}[e+f\,x]\right)^{3/2}\,dx$$

Optimal (type 8, 1340 leaves, 38 steps):

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

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

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

$$\frac{2\,b^{3/2}\,d^2\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{b}}\right]\,\text{Log}\left[\frac{2\,\sqrt{b}\,\left(\sqrt{-b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}+\sqrt{b}\right)\,\left(\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}\right]}{f^3} - \frac{4\,(-b)^{3/2}\,d^2\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{f^3} +$$

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

$$\frac{4\,(-b)^{3/2}\,d^2\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[\frac{2}{1+\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{f^3} - \frac{2\,b^{3/2}\,d^2\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{b}}{\sqrt{b}-\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{f^3} -$$

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

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

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

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

Result (type 8, 79 leaves, 1 step):

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

Problem 24: Result valid but suboptimal antiderivative.

$$\int \frac{(c+d\,x)^2}{\left(b\,\text{Tanh}[e+f\,x]\right)^{3/2}}\, \mathbb{d}x$$

Optimal (type 8, 1342 leaves, 38 steps):

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

$$\frac{2\,d^2\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{b}}\right]^2}{b^{3/2}\,f^3} - \frac{4\,d^2\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{b}}\right]\,\text{Log}\left[\frac{2\sqrt{b}}{\sqrt{b}-\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{b^{3/2}\,f^3} + \frac{4\,d^2\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{b}}\right]\,\text{Log}\left[\frac{2\sqrt{b}}{\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{b^{3/2}\,f^3} -$$

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

$$\frac{4\,d^2\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{(-b)^{3/2}\,f^3} + \frac{2\,d^2\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[\frac{2\left(\sqrt{b}-\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}+\sqrt{b}\right)\left(1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right)}\right]}{(-b)^{3/2}\,f^3} +$$

$$\frac{2\,d^2\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[-\frac{2\left(\sqrt{b}+\sqrt{b\,\text{Tanh}[e+f\,x]}\right)}{\left(\sqrt{-b}-\sqrt{b}\right)\left(1-\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right)}\right]}{(-b)^{3/2}\,f^3} + \frac{4\,d^2\,\text{ArcTanh}\left[\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}\right]\,\text{Log}\left[\frac{2}{1+\frac{\sqrt{b\,\text{Tanh}[e+f\,x]}}{\sqrt{-b}}}\right]}{(-b)^{3/2}\,f^3} - \frac{2\,d^2\,\text{PolyLog}\left[2,\,1-\frac{2\sqrt{b}}{\sqrt{b}-\sqrt{b\,\text{Tanh}[e+f\,x]}}\right]}{b^{3/2}\,f^3} -$$

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

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

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

Result (type 8, 83 leaves, 1 step) :

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

Test results for the 247 problems in "6.3.2 Hyperbolic tangent functions.m"

Problem 146: Unable to integrate problem.

$$\int x^3 \, \text{Tanh}[a + 2 \, \text{Log}[x]] \, dx$$

Optimal (type 3, 29 leaves, 4 steps):

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

Result (type 8, 13 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^3 \, \text{Tanh}[a + 2 \, \text{Log}[x]], \, x\right]$$

Problem 147: Unable to integrate problem.

$$\int x^2 \, \text{Tanh}[a + 2 \, \text{Log}[x]] \, dx$$

Optimal (type 3, 151 leaves, 11 steps):

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

Result (type 8, 13 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^2 \, \text{Tanh}[a + 2 \, \text{Log}[x]], \, x\right]$$

Problem 148: Unable to integrate problem.

$$\int x \, \text{Tanh}[a + 2 \, \text{Log}[x]] \, dx$$

Optimal (type 3, 23 leaves, 4 steps):

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

Result (type 8, 11 leaves, 0 steps):

$$\text{CannotIntegrate}[x \, \text{Tanh}[a + 2 \, \text{Log}[x]], \, x]$$

Problem 149: Unable to integrate problem.

$$\int \text{Tanh}[a + 2\,\text{Log}[x]]\,dx$$

Optimal (type 3, 145 leaves, 11 steps):

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

Result (type 8, 9 leaves, 0 steps):

CannotIntegrate[Tanh[a + 2 Log[x]], x]

Problem 151: Unable to integrate problem.

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

Optimal (type 3, 147 leaves, 11 steps):

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

Result (type 8, 13 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Tanh}[a + 2\,\text{Log}[x]]}{x^2}, x\right]$$

Problem 152: Unable to integrate problem.

$$\int \frac{\text{Tanh}[a + 2\,\text{Log}[x]]}{x^3}\,dx$$

Optimal (type 3, 20 leaves, 4 steps):

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

Result (type 8, 13 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Tanh}[a + 2\,\text{Log}[x]]}{x^3}, x\right]$$

Problem 153: Unable to integrate problem.

$$\int x^3 \, \text{Tanh}[a + 2 \, \text{Log}[x]]^2 \, dx$$

Optimal (type 3, 47 leaves, 4 steps):

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

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^3 \, \text{Tanh}[a + 2 \, \text{Log}[x]]^2, \, x\right]$$

Problem 154: Unable to integrate problem.

$$\int x^2 \, \text{Tanh}[a + 2 \, \text{Log}[x]]^2 \, dx$$

Optimal (type 3, 173 leaves, 12 steps):

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

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^2 \, \text{Tanh}[a + 2 \, \text{Log}[x]]^2, \, x\right]$$

Problem 155: Unable to integrate problem.

$$\int x \, \text{Tanh}[a + 2 \, \text{Log}[x]]^2 \, dx$$

Optimal (type 3, 40 leaves, 5 steps):

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

Result (type 8, 13 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x \, \text{Tanh}[a + 2 \, \text{Log}[x]]^2, \, x\right]$$

Problem 156: Unable to integrate problem.

$$\int \text{Tanh}[a + 2 \text{Log}[x]]^2 \, dx$$

Optimal (type 3, 165 leaves, 13 steps):

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

Result (type 8, 11 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Tanh}[a + 2 \text{Log}[x]]^2, x\right]$$

Problem 158: Unable to integrate problem.

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

Optimal (type 3, 190 leaves, 12 steps):

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

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

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Tanh}[a + 2 \text{Log}[x]]^2}{x^2}, x\right]$$

Problem 159: Unable to integrate problem.

$$\int \frac{\text{Tanh}[a + 2 \text{Log}[x]]^2}{x^3} \, dx$$

Optimal (type 3, 59 leaves, 5 steps):

$$-\frac{1}{2 x^2 \left(1 + e^{2a} x^4\right)} - \frac{3 e^{2a} x^2}{2\left(1 + e^{2a} x^4\right)} - e^a \text{ArcTan}\left[e^a x^2\right]$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\Big[\frac{\text{Tanh}[a + 2\,\text{Log}[x]]^2}{x^3}, x\Big]$$

Problem 160: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Tanh}[a + 2\,\text{Log}[x]]\,dx$$

Optimal (type 5, 60 leaves, 3 steps):

$$\frac{(e\,x)^{1+m}}{e\,(1+m)} - \frac{2\,(e\,x)^{1+m}\,\text{Hypergeometric2F1}\Big[1, \frac{1+m}{4}, \frac{5+m}{4}, -e^{2\,a}\,x^4\Big]}{e\,(1+m)}$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\Big[(e\,x)^m\,\text{Tanh}[a + 2\,\text{Log}[x]], x\Big]$$

Problem 161: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Tanh}[a + 2\,\text{Log}[x]]^2\,dx$$

Optimal (type 5, 79 leaves, 4 steps):

$$\frac{(e\,x)^{1+m}}{e\,(1+m)} + \frac{(e\,x)^{1+m}}{e\,(1+e^{2\,a}\,x^4)} - \frac{(e\,x)^{1+m}\,\text{Hypergeometric2F1}\Big[1, \frac{1+m}{4}, \frac{5+m}{4}, -e^{2\,a}\,x^4\Big]}{e}$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\Big[(e\,x)^m\,\text{Tanh}[a + 2\,\text{Log}[x]]^2, x\Big]$$

Problem 162: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Tanh}[a + 2\,\text{Log}[x]]^3\,dx$$

Optimal (type 5, 176 leaves, 5 steps):

$$\frac{(3+m)\,(5+m)\,(e\,x)^{1+m}}{8\,e\,(1+m)} - \frac{(e\,x)^{1+m}\,(1-e^{2\,a}\,x^4)^2}{4\,e\,(1+e^{2\,a}\,x^4)^2} -$$

$$\frac{e^{-2\,a}\,(e\,x)^{1+m}\,(e^{2\,a}\,(3-m) + e^{4\,a}\,(5+m)\,x^4)}{8\,e\,(1+e^{2\,a}\,x^4)} - \frac{(9+2\,m+m^2)\,(e\,x)^{1+m}\,\text{Hypergeometric2F1}\Big[1, \frac{1+m}{4}, \frac{5+m}{4}, -e^{2\,a}\,x^4\Big]}{4\,e\,(1+m)}$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\,(e\,x)^m\,\text{Tanh}[a + 2\,\text{Log}[x]]^3,\;x\,\right]$$

Problem 163: Unable to integrate problem.

$$\int \text{Tanh}[a + b\,\text{Log}[x]]^p\,dx$$

Optimal (type 6, 79 leaves, 3 steps):

$$x\,(1 - e^{2\,a}\,x^{2\,b})^{-p}\,(-1 + e^{2\,a}\,x^{2\,b})^p\,\text{AppellF1}\Big[\frac{1}{2\,b},\,-p,\,p,\,\frac{1}{2}\Big(2 + \frac{1}{b}\Big),\,e^{2\,a}\,x^{2\,b},\,-e^{2\,a}\,x^{2\,b}\Big]$$

Result (type 8, 11 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Tanh}[a + b\,\text{Log}[x]]^p,\;x\right]$$

Problem 164: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Tanh}[a + b\,\text{Log}[x]]^p\,dx$$

Optimal (type 6, 99 leaves, 3 steps):

$$\frac{(e\,x)^{1+m}\,(1 - e^{2\,a}\,x^{2\,b})^{-p}\,(-1 + e^{2\,a}\,x^{2\,b})^p\,\text{AppellF1}\Big[\frac{1+m}{2\,b},\,-p,\,p,\,1 + \frac{1+m}{2\,b},\,e^{2\,a}\,x^{2\,b},\,-e^{2\,a}\,x^{2\,b}\Big]}{e\,(1 + m)}$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\,(e\,x)^m\,\text{Tanh}[a + b\,\text{Log}[x]]^p,\;x\,\right]$$

Problem 165: Unable to integrate problem.

$$\int \text{Tanh}\Big[a + \frac{\text{Log}[x]}{2}\Big]^p\,dx$$

Optimal (type 5, 51 leaves, 2 steps):

$$\frac{2^{-p}\,e^{-2\,a}\,(-1 + e^{2\,a}\,x)^{1+p}\,\text{Hypergeometric2F1}\Big[p,\,1 + p,\,2 + p,\,\frac{1}{2}\,(1 - e^{2\,a}\,x)\Big]}{1 + p}$$

Result (type 8, 15 leaves, 1 step):

$$\text{CannotIntegrate}\left[\text{Tanh}\Big[\frac{1}{2}\,(2\,a + \text{Log}[x])\Big]^p,\;x\right]$$

Problem 166: Unable to integrate problem.

$$\int \mathrm{Tanh}\left[a + \frac{\mathrm{Log}[x]}{4}\right]^p \, dx$$

Optimal (type 5, 106 leaves, 4 steps):

$$e^{-4a} \left(-1 + e^{2a}\sqrt{x}\right)^{1+p} \left(1 + e^{2a}\sqrt{x}\right)^{1-p} - \frac{2^{1-p}\, e^{-4a}\, p \left(-1 + e^{2a}\sqrt{x}\right)^{1+p} \mathrm{Hypergeometric2F1}\left[p, 1+p, 2+p, \frac{1}{2}\left(1 - e^{2a}\sqrt{x}\right)\right]}{1+p}$$

Result (type 8, 15 leaves, 1 step):

$$\mathrm{CannotIntegrate}\left[\mathrm{Tanh}\left[\frac{1}{4}\left(4a + \mathrm{Log}[x]\right)\right]^p, x\right]$$

Problem 167: Unable to integrate problem.

$$\int \mathrm{Tanh}\left[a + \frac{\mathrm{Log}[x]}{6}\right]^p \, dx$$

Optimal (type 5, 158 leaves, 5 steps):

$$-e^{-6a} p \left(-1 + e^{2a} x^{1/3}\right)^{1+p} \left(1 + e^{2a} x^{1/3}\right)^{1-p} + e^{-4a}\left(-1 + e^{2a} x^{1/3}\right)^{1+p}\left(1 + e^{2a} x^{1/3}\right)^{1-p} x^{1/3} +$$

$$\frac{2^{-p}\, e^{-6a}\left(1 + 2p^2\right)\left(-1 + e^{2a} x^{1/3}\right)^{1+p} \mathrm{Hypergeometric2F1}\left[p, 1+p, 2+p, \frac{1}{2}\left(1 - e^{2a} x^{1/3}\right)\right]}{1+p}$$

Result (type 8, 15 leaves, 1 step):

$$\mathrm{CannotIntegrate}\left[\mathrm{Tanh}\left[\frac{1}{6}\left(6a + \mathrm{Log}[x]\right)\right]^p, x\right]$$

Problem 168: Unable to integrate problem.

$$\int \mathrm{Tanh}\left[a + \frac{\mathrm{Log}[x]}{8}\right]^p \, dx$$

Optimal (type 5, 190 leaves, 5 steps):

$$\frac{1}{3} e^{-12a}\left(-1 + e^{2a} x^{1/4}\right)^{1+p}\left(1 + e^{2a} x^{1/4}\right)^{1-p}\left(e^{4a}\left(3 + 2p^2\right) - 2 e^{6a} p\, x^{1/4}\right) + e^{-4a}\left(-1 + e^{2a} x^{1/4}\right)^{1+p}\left(1 + e^{2a} x^{1/4}\right)^{1-p}\sqrt{x} -$$

$$\frac{2^{2-p}\, e^{-8a}\, p \left(2 + p^2\right)\left(-1 + e^{2a} x^{1/4}\right)^{1+p} \mathrm{Hypergeometric2F1}\left[p, 1+p, 2+p, \frac{1}{2}\left(1 - e^{2a} x^{1/4}\right)\right]}{3\left(1+p\right)}$$

Result (type 8, 15 leaves, 1 step):

$$\text{CannotIntegrate}\left[\text{Tanh}\left[\frac{1}{8}\ (8\ a + \text{Log}[x])\right]^p, \ x\right]$$

Problem 169: Unable to integrate problem.

$$\int \text{Tanh}[a + \text{Log}[x]]^p \, dx$$

Optimal (type 6, 61 leaves, 3 steps):

$$x\ \left(1 - e^{2\ a}\ x^2\right)^{-p}\ \left(-1 + e^{2\ a}\ x^2\right)^p\ \text{AppellF1}\left[\frac{1}{2}, \ -p, \ p, \ \frac{3}{2}, \ e^{2\ a}\ x^2, \ -e^{2\ a}\ x^2\right]$$

Result (type 8, 9 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Tanh}[a + \text{Log}[x]]^p, \ x\right]$$

Problem 170: Unable to integrate problem.

$$\int \text{Tanh}[a + 2\ \text{Log}[x]]^p \, dx$$

Optimal (type 6, 61 leaves, 3 steps):

$$x\ \left(1 - e^{2\ a}\ x^4\right)^{-p}\ \left(-1 + e^{2\ a}\ x^4\right)^p\ \text{AppellF1}\left[\frac{1}{4}, \ -p, \ p, \ \frac{5}{4}, \ e^{2\ a}\ x^4, \ -e^{2\ a}\ x^4\right]$$

Result (type 8, 11 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Tanh}[a + 2\ \text{Log}[x]]^p, \ x\right]$$

Problem 171: Unable to integrate problem.

$$\int \text{Tanh}[a + 3\ \text{Log}[x]]^p \, dx$$

Optimal (type 6, 61 leaves, 3 steps):

$$x\ \left(1 - e^{2\ a}\ x^6\right)^{-p}\ \left(-1 + e^{2\ a}\ x^6\right)^p\ \text{AppellF1}\left[\frac{1}{6}, \ -p, \ p, \ \frac{7}{6}, \ e^{2\ a}\ x^6, \ -e^{2\ a}\ x^6\right]$$

Result (type 8, 11 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Tanh}[a + 3\ \text{Log}[x]]^p, \ x\right]$$

Problem 172: Unable to integrate problem.

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

Optimal (type 5, 59 leaves, 4 steps):

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

Result (type 8, 19 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^3\,\text{Tanh}\left[d\,\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right],\,x\right]$$

Problem 173: Unable to integrate problem.

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

Optimal (type 5, 63 leaves, 4 steps):

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

Result (type 8, 19 leaves, 0 steps):

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

Problem 174: Unable to integrate problem.

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

Optimal (type 5, 55 leaves, 4 steps):

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

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x\,\text{Tanh}\left[d\,\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right],\,x\right]$$

Problem 175: Unable to integrate problem.

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

Optimal (type 5, 53 leaves, 4 steps):

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

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Tanh}\left[d \left(a + b \, \text{Log}\left[c \, x^n\right]\right)\right], x\right]$$

Problem 177: Unable to integrate problem.

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

Optimal (type 5, 59 leaves, 4 steps):

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

Result (type 8, 19 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Tanh}\left[d \left(a + b \, \text{Log}\left[c \, x^n\right]\right)\right]}{x^2}, x\right]$$

Problem 178: Unable to integrate problem.

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

Optimal (type 5, 56 leaves, 4 steps):

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

Result (type 8, 19 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Tanh}\left[d \left(a + b \, \text{Log}\left[c \, x^n\right]\right)\right]}{x^3}, x\right]$$

Problem 179: Unable to integrate problem.

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

Optimal (type 5, 133 leaves, 5 steps):

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

Result (type 8, 21 leaves, 0 steps):

CannotIntegrate$\left[x^3\,\text{Tanh}\left[d\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right]^2,\,x\right]$

Problem 180: Unable to integrate problem.

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

Optimal (type 5, 137 leaves, 5 steps):

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

Result (type 8, 21 leaves, 0 steps):

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

Problem 181: Unable to integrate problem.

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

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

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

Result (type 8, 19 leaves, 0 steps):

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

Problem 182: Unable to integrate problem.

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

Optimal (type 5, 127 leaves, 5 steps):

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

Result (type 8, 17 leaves, 0 steps):

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

Problem 184: Unable to integrate problem.

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

Optimal (type 5, 135 leaves, 5 steps):

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

Result (type 8, 21 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Tanh}\left[d\,\left(a + b\,\text{Log}[c\,x^n]\right)\right]^2}{x^2}, x\right]$$

Problem 185: Unable to integrate problem.

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

Optimal (type 5, 136 leaves, 5 steps):

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

Result (type 8, 21 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Tanh}\left[d\,\left(a + b\,\text{Log}[c\,x^n]\right)\right]^2}{x^3}, x\right]$$

Problem 189: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Tanh}\left[d\,\left(a + b\,\text{Log}[c\,x^n]\right)\right]\,dx$$

Optimal (type 5, 88 leaves, 4 steps):

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

Result (type 8, 21 leaves, 0 steps):

$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Tanh}\left[d\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right], x\right]$

Problem 190: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Tanh}\left[d\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right]^2\,dx$$

Optimal (type 5, 169 leaves, 5 steps):

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

Result (type 8, 23 leaves, 0 steps):

$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Tanh}\left[d\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right]^2, x\right]$

Problem 191: Unable to integrate problem.

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

Optimal (type 5, 307 leaves, 6 steps):

$$\frac{(1+m+b\,d\,n)\,(1+m+2\,b\,d\,n)\,(e\,x)^{1+m}}{2\,b^2\,d^2\,e\,(1+m)\,n^2} - \frac{(e\,x)^{1+m}\left(1-e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right)^2}{2\,b\,d\,e\,n\left(1+e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right)^2} + \frac{e^{-2\,a\,d}\,(e\,x)^{1+m}\left(\frac{e^{2\,a\,d}\,(1+m-2\,b\,d\,n)}{n} - \frac{e^{4\,a\,d}\,(1+m+2\,b\,d\,n)\left(c\,x^n\right)^{2\,b\,d}}{n}\right)}{2\,b^2\,d^2\,e\,n\left(1+e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right)} -$$

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

Result (type 8, 23 leaves, 0 steps):

$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Tanh}\left[d\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right]^3, x\right]$

Problem 192: Unable to integrate problem.

$$\int \text{Tanh}\left[d\left(a + b \text{ Log}\left[c\, x^n\right]\right)\right]^p dx$$

Optimal (type 6, 115 leaves, 4 steps):

$$x\left(1 - e^{2ad}\left(c\, x^n\right)^{2bd}\right)^{-p}\left(-1 + e^{2ad}\left(c\, x^n\right)^{2bd}\right)^p \text{AppellF1}\left[\frac{1}{2bdn}, -p, p, 1 + \frac{1}{2bdn}, e^{2ad}\left(c\, x^n\right)^{2bd}, -e^{2ad}\left(c\, x^n\right)^{2bd}\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Tanh}\left[d\left(a + b \text{ Log}\left[c\, x^n\right]\right)\right]^p, x\right]$$

Problem 193: Unable to integrate problem.

$$\int (e\, x)^m \text{ Tanh}\left[d\left(a + b \text{ Log}\left[c\, x^n\right]\right)\right]^p dx$$

Optimal (type 6, 135 leaves, 4 steps):

$$\frac{1}{e\left(1 + m\right)}\left(e\, x\right)^{1+m}\left(1 - e^{2ad}\left(c\, x^n\right)^{2bd}\right)^{-p}\left(-1 + e^{2ad}\left(c\, x^n\right)^{2bd}\right)^p \text{AppellF1}\left[\frac{1+m}{2bdn}, -p, p, 1 + \frac{1+m}{2bdn}, e^{2ad}\left(c\, x^n\right)^{2bd}, -e^{2ad}\left(c\, x^n\right)^{2bd}\right]$$

Result (type 8, 23 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e\, x)^m \text{ Tanh}\left[d\left(a + b \text{ Log}\left[c\, x^n\right]\right)\right]^p, x\right]$$

Test results for the 263 problems in "6.3.7 (d hyper)^m (a+b (c tanh)^n)^p.m"

Test results for the 61 problems in "6.4.1 (c+d x)^m (a+b coth)^n.m"

Test results for the 224 problems in "6.4.2 Hyperbolic cotangent functions.m"

Problem 151: Unable to integrate problem.

$$\int x^3 \text{ Coth}\left[a + 2 \text{ Log}\left[x\right]\right] dx$$

Optimal (type 3, 30 leaves, 4 steps):

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

Result (type 8, 13 leaves, 0 steps):

$\text{CannotIntegrate}\left[x^3 \, \text{Coth}\left[a + 2\,\text{Log}\left[x\right]\right], x\right]$

Problem 152: Unable to integrate problem.

$$\int x^2 \, \text{Coth}\left[a + 2\,\text{Log}\left[x\right]\right] \, \mathbb{d}x$$

Optimal (type 3, 45 leaves, 5 steps):

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

Result (type 8, 13 leaves, 0 steps):

$\text{CannotIntegrate}\left[x^2 \, \text{Coth}\left[a + 2\,\text{Log}\left[x\right]\right], x\right]$

Problem 153: Unable to integrate problem.

$$\int x \, \text{Coth}\left[a + 2\,\text{Log}\left[x\right]\right] \, \mathbb{d}x$$

Optimal (type 3, 23 leaves, 4 steps):

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

Result (type 8, 11 leaves, 0 steps):

$\text{CannotIntegrate}\left[x \, \text{Coth}\left[a + 2\,\text{Log}\left[x\right]\right], x\right]$

Problem 154: Unable to integrate problem.

$$\int \text{Coth}\left[a + 2\,\text{Log}\left[x\right]\right] \, \mathbb{d}x$$

Optimal (type 3, 40 leaves, 5 steps):

$$x - \mathbb{e}^{-a/2} \, \text{ArcTan}\left[\mathbb{e}^{a/2} \, x\right] - \mathbb{e}^{-a/2} \, \text{ArcTanh}\left[\mathbb{e}^{a/2} \, x\right]$$

Result (type 8, 9 leaves, 0 steps):

$\text{CannotIntegrate}\left[\text{Coth}\left[a + 2\,\text{Log}\left[x\right]\right], x\right]$

Problem 156: Unable to integrate problem.

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

Optimal (type 3, 41 leaves, 5 steps):

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

Result (type 8, 13 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Coth}[a + 2\,\text{Log}[x]]}{x^2},\,x\right]$$

Problem 157: Unable to integrate problem.

$$\int \frac{\text{Coth}[a + 2\,\text{Log}[x]]}{x^3}\,dx$$

Optimal (type 3, 21 leaves, 4 steps):

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

Result (type 8, 13 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Coth}[a + 2\,\text{Log}[x]]}{x^3},\,x\right]$$

Problem 158: Unable to integrate problem.

$$\int x^3\,\text{Coth}[a + 2\,\text{Log}[x]]^2\,dx$$

Optimal (type 3, 47 leaves, 4 steps):

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

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^3\,\text{Coth}[a + 2\,\text{Log}[x]]^2,\,x\right]$$

Problem 159: Unable to integrate problem.

$$\int x^2 \, \text{Coth}[a + 2 \, \text{Log}[x]]^2 \, dx$$

Optimal (type 3, 68 leaves, 6 steps):

$$\frac{x^3}{3} + \frac{x^3}{1 - e^{2a} \, x^4} + \frac{3}{2} \, e^{-3a/2} \, \text{ArcTan}[e^{a/2} \, x] - \frac{3}{2} \, e^{-3a/2} \, \text{ArcTanh}[e^{a/2} \, x]$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}[x^2 \, \text{Coth}[a + 2 \, \text{Log}[x]]^2, \, x]$$

Problem 160: Unable to integrate problem.

$$\int x \, \text{Coth}[a + 2 \, \text{Log}[x]]^2 \, dx$$

Optimal (type 3, 41 leaves, 5 steps):

$$\frac{x^2}{2} + \frac{x^2}{1 - e^{2a} \, x^4} - e^{-a} \, \text{ArcTanh}[e^{a} \, x^2]$$

Result (type 8, 13 leaves, 0 steps):

$$\text{CannotIntegrate}[x \, \text{Coth}[a + 2 \, \text{Log}[x]]^2, \, x]$$

Problem 161: Unable to integrate problem.

$$\int \text{Coth}[a + 2 \, \text{Log}[x]]^2 \, dx$$

Optimal (type 3, 60 leaves, 7 steps):

$$x + \frac{x}{1 - e^{2a} \, x^4} - \frac{1}{2} \, e^{-a/2} \, \text{ArcTan}[e^{a/2} \, x] - \frac{1}{2} \, e^{-a/2} \, \text{ArcTanh}[e^{a/2} \, x]$$

Result (type 8, 11 leaves, 0 steps):

$$\text{CannotIntegrate}[\text{Coth}[a + 2 \, \text{Log}[x]]^2, \, x]$$

Problem 163: Unable to integrate problem.

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

Optimal (type 3, 86 leaves, 6 steps):

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

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Coth}[a+2\,\text{Log}[x]]^2}{x^2},\,x\right]$$

Problem 164: Unable to integrate problem.

$$\int\frac{\text{Coth}[a+2\,\text{Log}[x]]^2}{x^3}\,dx$$

Optimal (type 3, 60 leaves, 5 steps):

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

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Coth}[a+2\,\text{Log}[x]]^2}{x^3},\,x\right]$$

Problem 165: Unable to integrate problem.

$$\int(e\,x)^m\,\text{Coth}[a+2\,\text{Log}[x]]\,dx$$

Optimal (type 5, 59 leaves, 3 steps):

$$\frac{(e\,x)^{1+m}}{e\,(1+m)}-\frac{2\,(e\,x)^{1+m}\,\text{Hypergeometric2F1}\left[1,\frac{1+m}{4},\frac{5+m}{4},e^{2a}\,x^4\right]}{e\,(1+m)}$$

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Coth}[a+2\,\text{Log}[x]],\,x\right]$$

Problem 166: Unable to integrate problem.

$$\int(e\,x)^m\,\text{Coth}[a+2\,\text{Log}[x]]^2\,dx$$

Optimal (type 5, 79 leaves, 4 steps):

$$\frac{(e\,x)^{1+m}}{e\,(1+m)} + \frac{(e\,x)^{1+m}}{e\,(1-e^{2\,a}\,x^4)} - \frac{(e\,x)^{1+m}\,\text{Hypergeometric2F1}\left[1, \frac{1+m}{4}, \frac{5+m}{4}, e^{2\,a}\,x^4\right]}{e}$$

Result (type 8, 17 leaves, 0 steps):

$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Coth}[a+2\,\text{Log}[x]]^2, x\right]$

Problem 167: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Coth}[a+2\,\text{Log}[x]]^3\,dx$$

Optimal (type 5, 177 leaves, 5 steps):

$$\frac{(3+m)\,(5+m)\,(e\,x)^{1+m}}{8\,e\,(1+m)} - \frac{(e\,x)^{1+m}\,\left(1+e^{2\,a}\,x^4\right)^2}{4\,e\,\left(1-e^{2\,a}\,x^4\right)^2} -$$

$$\frac{e^{-2\,a}\,(e\,x)^{1+m}\,\left(e^{2\,a}\,(3-m)-e^{4\,a}\,(5+m)\,x^4\right)}{8\,e\,\left(1-e^{2\,a}\,x^4\right)} - \frac{\left(9+2\,m+m^2\right)\,(e\,x)^{1+m}\,\text{Hypergeometric2F1}\left[1, \frac{1+m}{4}, \frac{5+m}{4}, e^{2\,a}\,x^4\right]}{4\,e\,(1+m)}$$

Result (type 8, 17 leaves, 0 steps):

$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Coth}[a+2\,\text{Log}[x]]^3, x\right]$

Problem 168: Unable to integrate problem.

$$\int \text{Coth}[a+b\,\text{Log}[x]]^p\,dx$$

Optimal (type 6, 79 leaves, 3 steps):

$$x\,\left(-1-e^{2\,a}\,x^{2\,b}\right)^p\,\left(1+e^{2\,a}\,x^{2\,b}\right)^{-p}\,\text{AppellF1}\left[\frac{1}{2\,b}, p, -p, \frac{1}{2}\left(2+\frac{1}{b}\right), e^{2\,a}\,x^{2\,b}, -e^{2\,a}\,x^{2\,b}\right]$$

Result (type 8, 11 leaves, 0 steps):

$\text{CannotIntegrate}\left[\text{Coth}[a+b\,\text{Log}[x]]^p, x\right]$

Problem 169: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Coth}[a+b\,\text{Log}[x]]^p\,dx$$

Optimal (type 6, 99 leaves, 3 steps):

$$\frac{(e\,x)^{1+m}\,\left(-1-e^{2\,a}\,x^{2\,b}\right)^{p}\,\left(1+e^{2\,a}\,x^{2\,b}\right)^{-p}\,\text{AppellF1}\left[\frac{1+m}{2\,b},\,p,\,-p,\,1+\frac{1+m}{2\,b},\,e^{2\,a}\,x^{2\,b},\,-e^{2\,a}\,x^{2\,b}\right]}{e\,(1+m)}$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e\,x)^{m}\,\text{Coth}[a+b\,\text{Log}[x]]^{p},\,x\right]$$

Problem 170: Unable to integrate problem.

$$\int\text{Coth}\left[a+\frac{\text{Log}[x]}{2}\right]^{p}\,dx$$

Optimal (type 5, 52 leaves, 2 steps):

$$-\frac{2^{-p}\,e^{-2\,a}\,\left(-1-e^{2\,a}\,x\right)^{1+p}\,\text{Hypergeometric2F1}\left[p,\,1+p,\,2+p,\,\frac{1}{2}\,\left(1+e^{2\,a}\,x\right)\right]}{1+p}$$

Result (type 8, 15 leaves, 1 step):

$$\text{CannotIntegrate}\left[\text{Coth}\left[\frac{1}{2}\,(2\,a+\text{Log}[x])\right]^{p},\,x\right]$$

Problem 171: Unable to integrate problem.

$$\int\text{Coth}\left[a+\frac{\text{Log}[x]}{4}\right]^{p}\,dx$$

Optimal (type 5, 108 leaves, 4 steps):

$$e^{-4\,a}\,\left(-1-e^{2\,a}\,\sqrt{x}\right)^{1+p}\,\left(1-e^{2\,a}\,\sqrt{x}\right)^{1-p}-\frac{2^{1-p}\,e^{-4\,a}\,p\,\left(-1-e^{2\,a}\,\sqrt{x}\right)^{1+p}\,\text{Hypergeometric2F1}\left[p,\,1+p,\,2+p,\,\frac{1}{2}\,\left(1+e^{2\,a}\,\sqrt{x}\right)\right]}{1+p}$$

Result (type 8, 15 leaves, 1 step):

$$\text{CannotIntegrate}\left[\text{Coth}\left[\frac{1}{4}\,(4\,a+\text{Log}[x])\right]^{p},\,x\right]$$

Problem 172: Unable to integrate problem.

$$\int\text{Coth}\left[a+\frac{\text{Log}[x]}{6}\right]^{p}\,dx$$

Optimal (type 5, 162 leaves, 5 steps):

$e^{-6a} p \left(-1 - e^{2a} x^{1/3}\right)^{1+p} \left(1 - e^{2a} x^{1/3}\right)^{1-p} + e^{-4a} \left(-1 - e^{2a} x^{1/3}\right)^{1+p} \left(1 - e^{2a} x^{1/3}\right)^{1-p} x^{1/3} -$

$\dfrac{2^{-p} e^{-6a} \left(1 + 2 p^2\right) \left(-1 - e^{2a} x^{1/3}\right)^{1+p} \text{Hypergeometric2F1}\left[p, 1 + p, 2 + p, \frac{1}{2} \left(1 + e^{2a} x^{1/3}\right)\right]}{1 + p}$

Result (type 8, 15 leaves, 1 step):

$\text{CannotIntegrate}\left[\text{Coth}\left[\dfrac{1}{6} \left(6 a + \text{Log}[x]\right)\right]^p, x\right]$

Problem 173: Unable to integrate problem.

$\displaystyle\int \text{Coth}\left[a + \dfrac{\text{Log}[x]}{8}\right]^p \, dx$

Optimal (type 5, 194 leaves, 5 steps):

$\dfrac{1}{3} e^{-12a} \left(-1 - e^{2a} x^{1/4}\right)^{1+p} \left(1 - e^{2a} x^{1/4}\right)^{1-p} \left(e^{4a} \left(3 + 2 p^2\right) + 2 e^{6a} p \, x^{1/4}\right) + e^{-4a} \left(-1 - e^{2a} x^{1/4}\right)^{1+p} \left(1 - e^{2a} x^{1/4}\right)^{1-p} \sqrt{x} -$

$\dfrac{2^{2-p} e^{-8a} p \left(2 + p^2\right) \left(-1 - e^{2a} x^{1/4}\right)^{1+p} \text{Hypergeometric2F1}\left[p, 1 + p, 2 + p, \frac{1}{2} \left(1 + e^{2a} x^{1/4}\right)\right]}{3 \left(1 + p\right)}$

Result (type 8, 15 leaves, 1 step):

$\text{CannotIntegrate}\left[\text{Coth}\left[\dfrac{1}{8} \left(8 a + \text{Log}[x]\right)\right]^p, x\right]$

Problem 174: Unable to integrate problem.

$\displaystyle\int \text{Coth}[a + \text{Log}[x]]^p \, dx$

Optimal (type 6, 61 leaves, 3 steps):

$x \left(-1 - e^{2a} x^2\right)^p \left(1 + e^{2a} x^2\right)^{-p} \text{AppellF1}\left[\dfrac{1}{2}, p, -p, \dfrac{3}{2}, e^{2a} x^2, -e^{2a} x^2\right]$

Result (type 8, 9 leaves, 0 steps):

$\text{CannotIntegrate}\left[\text{Coth}[a + \text{Log}[x]]^p, x\right]$

Problem 175: Unable to integrate problem.

$\displaystyle\int \text{Coth}[a + 2 \, \text{Log}[x]]^p \, dx$

Optimal (type 6, 61 leaves, 3 steps):

$$x \left(-1 - e^{2a} x^4\right)^p \left(1 + e^{2a} x^4\right)^{-p} \text{AppellF1}\left[\frac{1}{4}, p, -p, \frac{5}{4}, e^{2a} x^4, -e^{2a} x^4\right]$$

Result (type 8, 11 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Coth}[a + 2 \text{Log}[x]]^p, x\right]$$

Problem 176: Unable to integrate problem.

$$\int \text{Coth}[a + 3 \text{Log}[x]]^p \, dx$$

Optimal (type 6, 61 leaves, 3 steps):

$$x \left(-1 - e^{2a} x^6\right)^p \left(1 + e^{2a} x^6\right)^{-p} \text{AppellF1}\left[\frac{1}{6}, p, -p, \frac{7}{6}, e^{2a} x^6, -e^{2a} x^6\right]$$

Result (type 8, 11 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Coth}[a + 3 \text{Log}[x]]^p, x\right]$$

Problem 177: Unable to integrate problem.

$$\int x^3 \text{Coth}\left[d \left(a + b \text{Log}\left[c x^n\right]\right)\right] dx$$

Optimal (type 5, 58 leaves, 4 steps):

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

Result (type 8, 19 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^3 \text{Coth}\left[d \left(a + b \text{Log}\left[c x^n\right]\right)\right], x\right]$$

Problem 178: Unable to integrate problem.

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

Optimal (type 5, 62 leaves, 4 steps):

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

Result (type 8, 19 leaves, 0 steps):

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

Problem 179: Unable to integrate problem.

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

Optimal (type 5, 54 leaves, 4 steps):

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

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x\,\text{Coth}\left[d\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right],\,x\right]$$

Problem 180: Unable to integrate problem.

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

Optimal (type 5, 52 leaves, 4 steps):

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

Result (type 8, 15 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Coth}\left[d\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right],\,x\right]$$

Problem 182: Unable to integrate problem.

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

Optimal (type 5, 58 leaves, 4 steps):

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

Result (type 8, 19 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Coth}\left[d\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\right]}{x^2},\,x\right]$$

Problem 183: Unable to integrate problem.

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

Optimal (type 5, 55 leaves, 4 steps):

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

Result (type 8, 19 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Coth}\left[d\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right]}{x^3}, x\right]$$

Problem 184: Unable to integrate problem.

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

Optimal (type 5, 132 leaves, 5 steps):

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

Result (type 8, 21 leaves, 0 steps):

$$\text{CannotIntegrate}\left[x^3\,\text{Coth}\left[d\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right]^2, x\right]$$

Problem 185: Unable to integrate problem.

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

Optimal (type 5, 136 leaves, 5 steps):

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

Result (type 8, 21 leaves, 0 steps):

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

Problem 186: Unable to integrate problem.

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

Optimal (type 5, 130 leaves, 5 steps):

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

Result (type 8, 19 leaves, 0 steps):

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

Problem 187: Unable to integrate problem.

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

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

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

Result (type 8, 17 leaves, 0 steps):

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

Problem 189: Unable to integrate problem.

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

Optimal (type 5, 134 leaves, 5 steps):

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

Result (type 8, 21 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Coth}\left[d\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right]^2}{x^2}, x\right]$$

Problem 190: Unable to integrate problem.

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

Optimal (type 5, 135 leaves, 5 steps):

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

Result (type 8, 21 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{\text{Coth}\left[d\left(a + b\,\text{Log}[c\,x^n]\right)\right]^2}{x^3}, x\right]$$

Problem 194: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Coth}\left[d\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right]\,dx$$

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

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

Result (type 8, 21 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Coth}\left[d\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right], x\right]$$

Problem 195: Unable to integrate problem.

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

Optimal (type 5, 168 leaves, 5 steps):

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

Result (type 8, 23 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Coth}\left[d\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right]^2, x\right]$$

Problem 196: Unable to integrate problem.

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

Optimal (type 5, 306 leaves, 6 steps):

$$\frac{\left(1 + m + b\,d\,n\right)\left(1 + m + 2\,b\,d\,n\right)(e\,x)^{1+m}}{2\,b^2\,d^2\,e\,\left(1 + m\right)n^2} - \frac{(e\,x)^{1+m}\left(1 + e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right)^2}{2\,b\,d\,e\,n\left(1 - e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right)^2} + \frac{e^{-2\,a\,d}\,(e\,x)^{1+m}\left(\frac{e^{2\,a\,d}\,(1+m-2\,b\,d\,n)}{n} + \frac{e^{4\,a\,d}\,(1+m+2\,b\,d\,n)\,(c\,x^n)^{2\,b\,d}}{n}\right)}{2\,b^2\,d^2\,e\,n\left(1 - e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right)} -$$

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

Result (type 8, 23 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Coth}\left[d\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right]^3, x\right]$$

Problem 197: Unable to integrate problem.

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

Optimal (type 6, 115 leaves, 4 steps):

$$x\left(-1 - e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right)^p\left(1 + e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right)^{-p}\text{AppellF1}\left[\frac{1}{2\,b\,d\,n}, p, -p, 1 + \frac{1}{2\,b\,d\,n}, e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}, -e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right]$$

Result (type 8, 17 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\text{Coth}\left[d\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right]^p, x\right]$$

Problem 198: Unable to integrate problem.

$$\int (e\,x)^m\,\text{Coth}\left[d\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right]^p \, dx$$

Optimal (type 6, 135 leaves, 4 steps):

$$\frac{1}{e\left(1 + m\right)}(e\,x)^{1+m}\left(-1 - e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right)^p\left(1 + e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right)^{-p}\text{AppellF1}\left[\frac{1+m}{2\,b\,d\,n}, p, -p, 1 + \frac{1+m}{2\,b\,d\,n}, e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}, -e^{2\,a\,d}\left(c\,x^n\right)^{2\,b\,d}\right]$$

Result (type 8, 23 leaves, 0 steps):

$$\text{CannotIntegrate}\left[(e\,x)^m\,\text{Coth}\left[d\left(a + b\,\text{Log}\left[c\,x^n\right]\right)\right]^p, x\right]$$

Test results for the 53 problems in "6.4.7 (d hyper)^m (a+b (c coth)^n)^p.m"

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

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

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

Problem 186: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

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

$$x \text{ Sech}\left[a + b \text{ Log}\left[c x^n\right]\right] + b n x \text{ Sech}\left[a + b \text{ Log}\left[c x^n\right]\right] \text{Tanh}\left[a + b \text{ Log}\left[c x^n\right]\right]$$

Result (type 5, 139 leaves, 9 steps):

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

$$\frac{16 b^2 e^{3a} n^2 x \left(c x^n\right)^{3b} \text{Hypergeometric2F1}\left[3, \frac{3b + \frac{1}{n}}{2b}, \frac{1}{2}\left(5 + \frac{1}{bn}\right), -e^{2a} \left(c x^n\right)^{2b}\right]}{1 + 3 b n}$$

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

Test results for the 29 problems in "6.6.1 (c+d x)^m (a+b csch)^n.m"

Test results for the 83 problems in "6.6.2 (e x)^m (a+b csch(c+d x^n))^p.m"

Test results for the 175 problems in "6.6.3 Hyperbolic cosecant functions.m"

Problem 160: Result unnecessarily involves higher level functions and more than twice size of optimal

antiderivative.

$$\int \left(- \left(1 - b^2 n^2\right) \text{Csch}\left[a + b \text{Log}\left[c x^n\right]\right] + 2 b^2 n^2 \text{Csch}\left[a + b \text{Log}\left[c x^n\right]\right]^3 \right) dx$$

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

$$- x \text{Csch}\left[a + b \text{Log}\left[c x^n\right]\right] - b n x \text{Coth}\left[a + b \text{Log}\left[c x^n\right]\right] \text{Csch}\left[a + b \text{Log}\left[c x^n\right]\right]$$

Result (type 5, 137 leaves, 9 steps) :

$$2 e^a \left(1 - b n\right) x \left(c x^n\right)^b \text{Hypergeometric2F1}\left[1, \frac{b + \frac{1}{n}}{2 b}, \frac{1}{2}\left(3 + \frac{1}{b n}\right), e^{2 a} \left(c x^n\right)^{2 b}\right] -$$
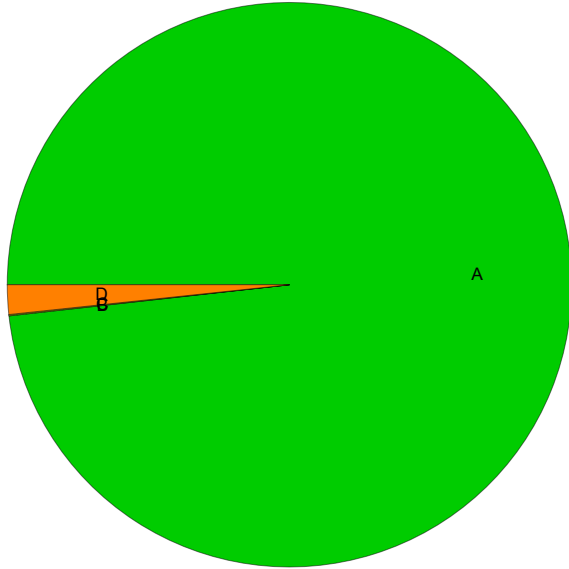
$$\frac{16 b^2 e^{3 a} n^2 x \left(c x^n\right)^{3 b} \text{Hypergeometric2F1}\left[3, \frac{3 b + \frac{1}{n}}{2 b}, \frac{1}{2}\left(5 + \frac{1}{b n}\right), e^{2 a} \left(c x^n\right)^{2 b}\right]}{1 + 3 b n}$$

Test results for the 27 problems in "6.6.7 (d hyper)^m (a+b (c csch)^n)^p.m"

Test results for the 1059 problems in "6.7.1 Hyperbolic functions.m"

Summary of Integration Test Results

5166 integration problems

A - 5075 optimal antiderivatives

B - 2 valid but suboptimal antiderivatives

C - 2 unnecessarily complex antiderivatives

D - 87 unable to integrate problems

E - 0 integration timeouts

F - 0 invalid antiderivatives