Mathematica 11.3 Integration Test Results

Test results for the 208 problems in "8.3 Exponential integral functions.m"

Problem 4: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[1, b\,x]}{x}\, dx$$

Optimal (type 5, 32 leaves, 1 step):

$$b\,x\,\text{HypergeometricPFQ}[\{1, 1, 1\}, \{2, 2, 2\}, -b\,x] - \text{EulerGamma}\,\text{Log}[x] - \frac{1}{2}\,\text{Log}[b\,x]^2$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[1, b\,x]}{x}\, dx$$

Problem 5: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[1, b\,x]}{x^2}\, dx$$

Optimal (type 4, 20 leaves, 1 step):

$$-\frac{\text{ExpIntegralE}[1, b\,x]}{x} + \frac{\text{ExpIntegralE}[2, b\,x]}{x}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[1, b\,x]}{x^2}\, dx$$

Problem 6: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[1, b\,x]}{x^3}\, dx$$

Optimal (type 4, 25 leaves, 1 step):

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

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[1, b\,x]}{x^3}\, dx$$

Problem 7: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[1, b\,x]}{x^4} \, dx$$

Optimal (type 4, 25 leaves, 1 step):

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

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[1, b\,x]}{x^4} \, dx$$

Problem 11: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[2, b\,x]}{x} \, dx$$

Optimal (type 4, 13 leaves, 1 step):

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

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[2, b\,x]}{x} \, dx$$

Problem 12: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[2, b\,x]}{x^2} \, dx$$

Optimal (type 5, 46 leaves, 2 steps):

$$-\frac{\text{ExpIntegralE}[2, b\,x]}{x} - $$

$$b^2\,x\,\text{HypergeometricPFQ}[\{1, 1, 1\}, \{2, 2, 2\}, -b\,x] + b\,\text{EulerGamma}\,\text{Log}[x] + \frac{1}{2}\,b\,\text{Log}[b\,x]^2$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[2, b\,x]}{x^2} \, dx$$

Problem 13: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[2, b\,x]}{x^3} \, dx$$

Optimal (type 4, 20 leaves, 1 step):

$$-\frac{\text{ExpIntegralE}[2, b\,x]}{x^2} + \frac{\text{ExpIntegralE}[3, b\,x]}{x^2}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[2, b\,x]}{x^3}\, dx$$

Problem 14: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[2, b\,x]}{x^4}\, dx$$

Optimal (type 4, 25 leaves, 1 step):

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

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[2, b\,x]}{x^4}\, dx$$

Problem 15: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[2, b\,x]}{x^5}\, dx$$

Optimal (type 4, 25 leaves, 1 step):

$$-\frac{\text{ExpIntegralE}[2, b\,x]}{3\,x^4} + \frac{\text{ExpIntegralE}[5, b\,x]}{3\,x^4}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[2, b\,x]}{x^5}\, dx$$

Problem 19: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[3, b\,x]}{x}\, dx$$

Optimal (type 4, 19 leaves, 1 step):

$$-\frac{1}{2}\,\text{ExpIntegralE}[1, b\,x] + \frac{1}{2}\,\text{ExpIntegralE}[3, b\,x]$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[3, b\,x]}{x}\, dx$$

Problem 20: Unable to integrate problem.

$$\int \frac{ExpIntegralE[3, b\,x]}{x^2}\,dx$$

Optimal (type 4, 20 leaves, 1 step):

$$-\frac{ExpIntegralE[2, b\,x]}{x} + \frac{ExpIntegralE[3, b\,x]}{x}$$

Result (type 8, 11 leaves):

$$\int \frac{ExpIntegralE[3, b\,x]}{x^2}\,dx$$

Problem 21: Unable to integrate problem.

$$\int \frac{ExpIntegralE[3, b\,x]}{x^3}\,dx$$

Optimal (type 5, 70 leaves, 3 steps):

$$\frac{b\,ExpIntegralE[2, b\,x]}{2\,x} - \frac{ExpIntegralE[3, b\,x]}{2\,x^2} +$$
$$\frac{1}{2}\,b^3\,x\,HypergeometricPFQ[\{1, 1, 1\}, \{2, 2, 2\}, -b\,x] - \frac{1}{2}\,b^2\,EulerGamma\,Log[x] - \frac{1}{4}\,b^2\,Log[b\,x]^2$$

Result (type 8, 11 leaves):

$$\int \frac{ExpIntegralE[3, b\,x]}{x^3}\,dx$$

Problem 22: Unable to integrate problem.

$$\int \frac{ExpIntegralE[3, b\,x]}{x^4}\,dx$$

Optimal (type 4, 20 leaves, 1 step):

$$-\frac{ExpIntegralE[3, b\,x]}{x^3} + \frac{ExpIntegralE[4, b\,x]}{x^3}$$

Result (type 8, 11 leaves):

$$\int \frac{ExpIntegralE[3, b\,x]}{x^4}\,dx$$

Problem 23: Unable to integrate problem.

$$\int \frac{ExpIntegralE[3, b\,x]}{x^5}\,dx$$

Optimal (type 4, 25 leaves, 1 step):

$$-\frac{\text{ExpIntegralE}[3, b\,x]}{2\,x^4} + \frac{\text{ExpIntegralE}[5, b\,x]}{2\,x^4}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[3, b\,x]}{x^5}\, dx$$

Problem 24: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[3, b\,x]}{x^6}\, dx$$

Optimal (type 4, 25 leaves, 1 step):

$$-\frac{\text{ExpIntegralE}[3, b\,x]}{3\,x^5} + \frac{\text{ExpIntegralE}[6, b\,x]}{3\,x^5}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[3, b\,x]}{x^6}\, dx$$

Problem 29: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[-1, b\,x]}{x}\, dx$$

Optimal (type 4, 19 leaves, 1 step):

$$-\frac{1}{2}\,\text{ExpIntegralE}[-1, b\,x] + \frac{1}{2}\,\text{ExpIntegralE}[1, b\,x]$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[-1, b\,x]}{x}\, dx$$

Problem 30: Unable to integrate problem.

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

Optimal (type 4, 25 leaves, 1 step):

$$-\frac{\text{ExpIntegralE}[-1, b\,x]}{3\,x} + \frac{\text{ExpIntegralE}[2, b\,x]}{3\,x}$$

Result (type 8, 11 leaves):

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

Problem 31: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[-1, b\,x]}{x^3}\,dx$$

Optimal (type 4, 25 leaves, 1 step):

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

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[-1, b\,x]}{x^3}\,dx$$

Problem 37: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[-2, b\,x]}{x}\,dx$$

Optimal (type 4, 19 leaves, 1 step):

$$-\frac{1}{3}\,\text{ExpIntegralE}[-2, b\,x] + \frac{1}{3}\,\text{ExpIntegralE}[1, b\,x]$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[-2, b\,x]}{x}\,dx$$

Problem 38: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[-2, b\,x]}{x^2}\,dx$$

Optimal (type 4, 25 leaves, 1 step):

$$-\frac{\text{ExpIntegralE}[-2, b\,x]}{4\,x} + \frac{\text{ExpIntegralE}[2, b\,x]}{4\,x}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[-2, b\,x]}{x^2}\,dx$$

Problem 39: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[-2, b\,x]}{x^3}\,dx$$

Optimal (type 4, 25 leaves, 1 step):

$$-\frac{\text{ExpIntegralE}[-2, b\,x]}{5\,x^2} + \frac{\text{ExpIntegralE}[3, b\,x]}{5\,x^2}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[-2, b\,x]}{x^3}\,dx$$

Problem 40: Result more than twice size of optimal antiderivative.

$$\int x^5\,\text{ExpIntegralE}[-3, b\,x]\,dx$$

Optimal (type 4, 25 leaves, 1 step):

$$-\frac{1}{2}\,x^6\,\text{ExpIntegralE}[-5, b\,x] + \frac{1}{2}\,x^6\,\text{ExpIntegralE}[-3, b\,x]$$

Result (type 4, 60 leaves):

$$-\frac{1}{b^6}\,e^{-b\,x}\left(60 + 60\,b\,x + 20\,b^2\,x^2 + b^5\,e^{b\,x}\,x^5\,\text{ExpIntegralE}[-2, b\,x] + 5\,b^4\,e^{b\,x}\,x^4\,\text{ExpIntegralE}[-1, b\,x]\right)$$

Problem 41: Result more than twice size of optimal antiderivative.

$$\int x^4\,\text{ExpIntegralE}[-3, b\,x]\,dx$$

Optimal (type 4, 20 leaves, 1 step):

$$-x^5\,\text{ExpIntegralE}[-4, b\,x] + x^5\,\text{ExpIntegralE}[-3, b\,x]$$

Result (type 4, 49 leaves):

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

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

$$\int x^2\,\text{ExpIntegralE}[-3, b\,x]\,dx$$

Optimal (type 4, 20 leaves, 1 step):

$$-x^3\,\text{ExpIntegralE}[-3, b\,x] + x^3\,\text{ExpIntegralE}[-2, b\,x]$$

Result (type 4, 42 leaves):

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

Problem 46: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[-3, b\,x]}{x}\,dx$$

Optimal (type 4, 19 leaves, 1 step):

$$-\frac{1}{4}\,\text{ExpIntegralE}[-3, b\,x] + \frac{1}{4}\,\text{ExpIntegralE}[1, b\,x]$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[-3, b\,x]}{x}\,dx$$

Problem 47: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[-3, b\,x]}{x^2}\,dx$$

Optimal (type 4, 25 leaves, 1 step):

$$-\frac{\text{ExpIntegralE}[-3, b\,x]}{5\,x} + \frac{\text{ExpIntegralE}[2, b\,x]}{5\,x}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[-3, b\,x]}{x^2}\,dx$$

Problem 48: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[-3, b\,x]}{x^3}\,dx$$

Optimal (type 4, 25 leaves, 1 step):

$$-\frac{\text{ExpIntegralE}[-3, b\,x]}{6\,x^2} + \frac{\text{ExpIntegralE}[3, b\,x]}{6\,x^2}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[-3, b\,x]}{x^3}\,dx$$

Problem 53: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[1, b\,x]}{x}\,dx$$

Optimal (type 5, 32 leaves, 1 step):

$$b\,x\,\text{HypergeometricPFQ}[\{1, 1, 1\}, \{2, 2, 2\}, -b\,x] - \text{EulerGamma}\,\text{Log}[x] - \frac{1}{2}\,\text{Log}[b\,x]^2$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[1, b\,x]}{x}\,dx$$

Problem 54: Unable to integrate problem.

$$\int \frac{\texttt{ExpIntegralE[2, b x]}}{x^2} \, dx$$

Optimal (type 5, 46 leaves, 2 steps):

$$-\frac{\texttt{ExpIntegralE[2, b x]}}{x} - $$

$$b^2 \, x \, \texttt{HypergeometricPFQ}[\{1, 1, 1\}, \{2, 2, 2\}, -b x] + b \, \texttt{EulerGamma} \, \texttt{Log}[x] + \frac{1}{2} \, b \, \texttt{Log}[b x]^2$$

Result (type 8, 11 leaves):

$$\int \frac{\texttt{ExpIntegralE[2, b x]}}{x^2} \, dx$$

Problem 55: Unable to integrate problem.

$$\int \frac{\texttt{ExpIntegralE[3, b x]}}{x^3} \, dx$$

Optimal (type 5, 70 leaves, 3 steps):

$$\frac{b \, \texttt{ExpIntegralE[2, b x]}}{2 \, x} - \frac{\texttt{ExpIntegralE[3, b x]}}{2 \, x^2} + $$

$$\frac{1}{2} \, b^3 \, x \, \texttt{HypergeometricPFQ}[\{1, 1, 1\}, \{2, 2, 2\}, -b x] - \frac{1}{2} \, b^2 \, \texttt{EulerGamma} \, \texttt{Log}[x] - \frac{1}{4} \, b^2 \, \texttt{Log}[b x]^2$$

Result (type 8, 11 leaves):

$$\int \frac{\texttt{ExpIntegralE[3, b x]}}{x^3} \, dx$$

Problem 56: Unable to integrate problem.

$$\int (d x)^{3/2} \, \texttt{ExpIntegralE}\left[-\frac{3}{2}, b x\right] \, dx$$

Optimal (type 5, 62 leaves, 1 step):

$$-\frac{4 \, (d x)^{5/2} \, \texttt{HypergeometricPFQ}\left[\left\{\frac{5}{2}, \frac{5}{2}\right\}, \left\{\frac{7}{2}, \frac{7}{2}\right\}, -b x\right]}{25 \, d} + \frac{3 \, \sqrt{\pi} \, (d x)^{3/2} \, \texttt{Log}[x]}{4 \, b \, (b x)^{3/2}}$$

Result (type 8, 17 leaves):

$$\int (d x)^{3/2} \, \texttt{ExpIntegralE}\left[-\frac{3}{2}, b x\right] \, dx$$

Problem 57: Unable to integrate problem.

$$\int \sqrt{d\,x}\ \text{ExpIntegralE}\left[-\frac{1}{2},\,b\,x\right]\,dx$$

Optimal (type 5, 62 leaves, 1 step):

$$-\frac{4\,(d\,x)^{3/2}\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-b\,x\right]}{9\,d}+\frac{\sqrt{\pi}\,\sqrt{d\,x}\,\text{Log}[x]}{2\,b\,\sqrt{b\,x}}$$

Result (type 8, 17 leaves):

$$\int \sqrt{d\,x}\ \text{ExpIntegralE}\left[-\frac{1}{2},\,b\,x\right]\,dx$$

Problem 58: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}\left[\frac{1}{2},\,b\,x\right]}{\sqrt{d\,x}}\,dx$$

Optimal (type 5, 57 leaves, 1 step):

$$-\frac{4\,\sqrt{d\,x}\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2}\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},-b\,x\right]}{d}+\frac{\sqrt{\pi}\,\sqrt{b\,x}\,\text{Log}[x]}{b\,\sqrt{d\,x}}$$

Result (type 8, 17 leaves):

$$\int \frac{\text{ExpIntegralE}\left[\frac{1}{2},\,b\,x\right]}{\sqrt{d\,x}}\,dx$$

Problem 59: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}\left[\frac{3}{2},\,b\,x\right]}{(d\,x)^{3/2}}\,dx$$

Optimal (type 5, 58 leaves, 1 step):

$$-\frac{4\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},-b\,x\right]}{d\,\sqrt{d\,x}}-\frac{2\,\sqrt{\pi}\,(b\,x)^{3/2}\,\text{Log}[x]}{b\,(d\,x)^{3/2}}$$

Result (type 8, 17 leaves):

$$\int \frac{\text{ExpIntegralE}\left[\frac{3}{2},\,b\,x\right]}{(d\,x)^{3/2}}\,dx$$

Problem 60: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}\left[\frac{5}{2}, b\,x\right]}{(d\,x)^{5/2}}\,dx$$

Optimal (type 5, 62 leaves, 1 step):

$$-\frac{4\,\text{HypergeometricPFQ}\left[\left\{-\frac{3}{2},\,-\frac{3}{2}\right\},\,\left\{-\frac{1}{2},\,-\frac{1}{2}\right\},\,-b\,x\right]}{9\,d\,(d\,x)^{3/2}}+\frac{4\,\sqrt{\pi}\,(b\,x)^{5/2}\,\text{Log}[x]}{3\,b\,(d\,x)^{5/2}}$$

Result (type 8, 17 leaves):

$$\int \frac{\text{ExpIntegralE}\left[\frac{5}{2}, b\,x\right]}{(d\,x)^{5/2}}\,dx$$

Problem 61: Unable to integrate problem.

$$\int x^m\,\text{ExpIntegralE}[n, x]\,dx$$

Optimal (type 4, 32 leaves, 1 step):

$$-\frac{x^{1+m}\,\text{ExpIntegralE}[-m, x]}{m+n}+\frac{x^{1+m}\,\text{ExpIntegralE}[n, x]}{m+n}$$

Result (type 8, 9 leaves):

$$\int x^m\,\text{ExpIntegralE}[n, x]\,dx$$

Problem 62: Unable to integrate problem.

$$\int x^m\,\text{ExpIntegralE}[n, b\,x]\,dx$$

Optimal (type 4, 36 leaves, 1 step):

$$-\frac{x^{1+m}\,\text{ExpIntegralE}[-m, b\,x]}{m+n}+\frac{x^{1+m}\,\text{ExpIntegralE}[n, b\,x]}{m+n}$$

Result (type 8, 11 leaves):

$$\int x^m\,\text{ExpIntegralE}[n, b\,x]\,dx$$

Problem 63: Unable to integrate problem.

$$\int (d\,x)^m\,\text{ExpIntegralE}[n, x]\,dx$$

Optimal (type 4, 42 leaves, 1 step):

$$-\frac{(d\,x)^{1+m}\,\text{ExpIntegralE}[-m,\,x]}{d\,(m+n)} + \frac{(d\,x)^{1+m}\,\text{ExpIntegralE}[n,\,x]}{d\,(m+n)}$$

Result (type 8, 11 leaves) :

$$\int (d\,x)^m\,\text{ExpIntegralE}[n,\,x]\,dx$$

Problem 64: Unable to integrate problem.

$$\int (d\,x)^m\,\text{ExpIntegralE}[n,\,b\,x]\,dx$$

Optimal (type 4, 46 leaves, 1 step) :

$$-\frac{(d\,x)^{1+m}\,\text{ExpIntegralE}[-m,\,b\,x]}{d\,(m+n)} + \frac{(d\,x)^{1+m}\,\text{ExpIntegralE}[n,\,b\,x]}{d\,(m+n)}$$

Result (type 8, 13 leaves) :

$$\int (d\,x)^m\,\text{ExpIntegralE}[n,\,b\,x]\,dx$$

Problem 65: Unable to integrate problem.

$$\int x^{-n}\,\text{ExpIntegralE}[n,\,x]\,dx$$

Optimal (type 5, 52 leaves, 1 step) :

$$-\frac{x^{1-n}\,\text{HypergeometricPFQ}[\{1-n,\,1-n\},\,\{2-n,\,2-n\},\,-x]}{(1-n)^2} + \text{Gamma}[1-n]\,\text{Log}[x]$$

Result (type 8, 11 leaves) :

$$\int x^{-n}\,\text{ExpIntegralE}[n,\,x]\,dx$$

Problem 66: Unable to integrate problem.

$$\int x^{-n}\,\text{ExpIntegralE}[n,\,b\,x]\,dx$$

Optimal (type 5, 66 leaves, 1 step) :

$$-\frac{x^{1-n}\,\text{HypergeometricPFQ}[\{1-n,\,1-n\},\,\{2-n,\,2-n\},\,-b\,x]}{(1-n)^2} + \frac{x^{-n}\,(b\,x)^n\,\text{Gamma}[1-n]\,\text{Log}[x]}{b}$$

Result (type 8, 13 leaves) :

$$\int x^{-n}\,\text{ExpIntegralE}[n,\,b\,x]\,dx$$

Problem 67: Unable to integrate problem.

$$\int (d\,x)^{-n}\,\text{ExpIntegralE}[n,\,x]\,dx$$

Optimal (type 5, 67 leaves, 1 step):

$$-\frac{(d\,x)^{1-n}\,\text{HypergeometricPFQ}[\{1-n,\,1-n\},\,\{2-n,\,2-n\},\,-x]}{d\,(1-n)^2} + x^n\,(d\,x)^{-n}\,\text{Gamma}[1-n]\,\text{Log}[x]$$

Result (type 8, 13 leaves):

$$\int (d\,x)^{-n}\,\text{ExpIntegralE}[n,\,x]\,dx$$

Problem 68: Unable to integrate problem.

$$\int (d\,x)^{-n}\,\text{ExpIntegralE}[n,\,b\,x]\,dx$$

Optimal (type 5, 73 leaves, 1 step):

$$-\frac{(d\,x)^{1-n}\,\text{HypergeometricPFQ}[\{1-n,\,1-n\},\,\{2-n,\,2-n\},\,-b\,x]}{d\,(1-n)^2} +$$

$$\frac{(b\,x)^n\,(d\,x)^{-n}\,\text{Gamma}[1-n]\,\text{Log}[x]}{b}$$

Result (type 8, 15 leaves):

$$\int (d\,x)^{-n}\,\text{ExpIntegralE}[n,\,b\,x]\,dx$$

Problem 72: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[n,\,b\,x]}{x}\,dx$$

Optimal (type 4, 28 leaves, 1 step):

$$\frac{\text{ExpIntegralE}[1,\,b\,x]}{1-n} - \frac{\text{ExpIntegralE}[n,\,b\,x]}{1-n}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[n,\,b\,x]}{x}\,dx$$

Problem 73: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[n,\,b\,x]}{x^2}\,dx$$

Optimal (type 4, 34 leaves, 1 step):

$$\frac{\text{ExpIntegralE}[2, b\,x]}{(2-n)\,x} - \frac{\text{ExpIntegralE}[n, b\,x]}{(2-n)\,x}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[n, b\,x]}{x^2}\,\mathbb{d}x$$

Problem 74: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[n, b\,x]}{x^3}\,\mathbb{d}x$$

Optimal (type 4, 34 leaves, 1 step):

$$\frac{\text{ExpIntegralE}[3, b\,x]}{(3-n)\,x^2} - \frac{\text{ExpIntegralE}[n, b\,x]}{(3-n)\,x^2}$$

Result (type 8, 11 leaves):

$$\int \frac{\text{ExpIntegralE}[n, b\,x]}{x^3}\,\mathbb{d}x$$

Problem 80: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[1, a+b\,x]}{(c+d\,x)^2}\,\mathbb{d}x$$

Optimal (type 4, 84 leaves, 5 steps):

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

Result (type 8, 17 leaves):

$$\int \frac{\text{ExpIntegralE}[1, a+b\,x]}{(c+d\,x)^2}\,\mathbb{d}x$$

Problem 81: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[1, a+b\,x]}{(c+d\,x)^3}\,\mathbb{d}x$$

Optimal (type 4, 174 leaves, 7 steps):

$$-\frac{b\,\mathbb{e}^{-a-b\,x}}{2\,d\,(b\,c-a\,d)\,(c+d\,x)} - \frac{\text{ExpIntegralE}[1, a+b\,x]}{2\,d\,(c+d\,x)^2} - \frac{b^2\,\text{ExpIntegralEi}[-a-b\,x]}{2\,d\,(b\,c-a\,d)^2} +$$

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

Result (type 8, 17 leaves):

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

Problem 82: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[1, a + b\, x]}{(c + d\, x)^4}\, dx$$

Optimal (type 4, 292 leaves, 10 steps):

$$-\frac{b\, e^{-a-b\,x}}{6\,d\,(b\,c - a\,d)\,(c + d\,x)^2} - \frac{b^2\, e^{-a-b\,x}}{3\,d\,(b\,c - a\,d)^2\,(c + d\,x)} + \frac{b^2\, e^{-a-b\,x}}{6\,d^2\,(b\,c - a\,d)\,(c + d\,x)} -$$

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

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

Result (type 8, 17 leaves):

$$\int \frac{\text{ExpIntegralE}[1, a + b\, x]}{(c + d\, x)^4}\, dx$$

Problem 89: Unable to integrate problem.

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

Optimal (type 4, 117 leaves, 6 steps):

$$\frac{b\,\text{ExpIntegralE}[1, a + b\,x]}{2\,d^2\,(c + d\,x)} - \frac{\text{ExpIntegralE}[2, a + b\,x]}{2\,d\,(c + d\,x)^2} +$$

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

Result (type 8, 17 leaves):

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

Problem 90: Unable to integrate problem.

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

Optimal (type 4, 198 leaves, 8 steps):

$$\frac{b^2\, e^{-a-b\,x}}{6\,d^2\,(b\,c-a\,d)\,(c+d\,x)} + \frac{b\,\text{ExpIntegralE}[1,\,a+b\,x]}{6\,d^2\,(c+d\,x)^2} -$$

$$\frac{\text{ExpIntegralE}[2,\,a+b\,x]}{3\,d\,(c+d\,x)^3} + \frac{b^3\,\text{ExpIntegralEi}[-a-b\,x]}{6\,d^2\,(b\,c-a\,d)^2} -$$

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

Result (type 8, 17 leaves):

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

Problem 98: Unable to integrate problem.

$$\int\frac{\text{ExpIntegralE}[3,\,a+b\,x]}{(c+d\,x)^4}\,dx$$

Optimal (type 4, 141 leaves, 7 steps):

$$-\frac{b^2\,\text{ExpIntegralE}[1,\,a+b\,x]}{6\,d^3\,(c+d\,x)} + \frac{b\,\text{ExpIntegralE}[2,\,a+b\,x]}{6\,d^2\,(c+d\,x)^2} -$$

$$\frac{\text{ExpIntegralE}[3,\,a+b\,x]}{3\,d\,(c+d\,x)^3} - \frac{b^3\,\text{ExpIntegralEi}[-a-b\,x]}{6\,d^3\,(b\,c-a\,d)} + \frac{b^3\,e^{-a+\frac{b\,c}{d}}\,\text{ExpIntegralEi}\left[-\frac{b\,(c+d\,x)}{d}\right]}{6\,d^3\,(b\,c-a\,d)}$$

Result (type 8, 17 leaves):

$$\int\frac{\text{ExpIntegralE}[3,\,a+b\,x]}{(c+d\,x)^4}\,dx$$

Problem 104: Unable to integrate problem.

$$\int\frac{\text{ExpIntegralE}[-1,\,a+b\,x]}{c+d\,x}\,dx$$

Optimal (type 4, 157 leaves, 7 steps):

$$-\frac{d\,e^{-a-b\,x}}{b\,(b\,c-a\,d)\,(c+d\,x)} - \frac{e^{-a-b\,x}}{b\,(a+b\,x)\,(c+d\,x)} - \frac{d\,\text{ExpIntegralEi}[-a-b\,x]}{(b\,c-a\,d)^2} +$$

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

Result (type 8, 17 leaves):

$$\int\frac{\text{ExpIntegralE}[-1,\,a+b\,x]}{c+d\,x}\,dx$$

Problem 105: Unable to integrate problem.

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

Optimal (type 4, 258 leaves, 10 steps):

$$-\frac{d\,e^{-a-b\,x}}{b\,(b\,c - a\,d)\,(c + d\,x)^2} - \frac{e^{-a-b\,x}}{b\,(a + b\,x)\,(c + d\,x)^2} - \frac{2\,d\,e^{-a-b\,x}}{(b\,c - a\,d)^2\,(c + d\,x)} +$$

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

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

Result (type 8, 17 leaves):

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

Problem 106: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[-1, a + b\,x]}{(c + d\,x)^3}\,dx$$

Optimal (type 4, 416 leaves, 14 steps):

$$-\frac{d\,e^{-a-b\,x}}{b\,(b\,c - a\,d)\,(c + d\,x)^3} - \frac{e^{-a-b\,x}}{b\,(a + b\,x)\,(c + d\,x)^3} -$$

$$\frac{3\,d\,e^{-a-b\,x}}{2\,(b\,c - a\,d)^2\,(c + d\,x)^2} + \frac{e^{-a-b\,x}}{2\,(b\,c - a\,d)\,(c + d\,x)^2} - \frac{3\,b\,d\,e^{-a-b\,x}}{(b\,c - a\,d)^3\,(c + d\,x)} +$$

$$\frac{3\,b\,e^{-a-b\,x}}{2\,(b\,c - a\,d)^2\,(c + d\,x)} - \frac{b\,e^{-a-b\,x}}{2\,d\,(b\,c - a\,d)\,(c + d\,x)} - \frac{3\,b^2\,d\,\text{ExpIntegralEi}[-a - b\,x]}{(b\,c - a\,d)^4} +$$

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

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

Result (type 8, 17 leaves):

$$\int \frac{\text{ExpIntegralE}[-1, a + b\,x]}{(c + d\,x)^3}\,dx$$

Problem 112: Unable to integrate problem.

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

Optimal (type 4, 287 leaves, 11 steps):

$$\frac{d^2\, e^{-a-b\,x}}{b^2\,(b\,c - a\,d)\,(c + d\,x)^2} + \frac{d\, e^{-a-b\,x}}{b^2\,(a + b\,x)\,(c + d\,x)^2} + \frac{2\,d^2\, e^{-a-b\,x}}{b\,(b\,c - a\,d)^2\,(c + d\,x)} - \frac{d\, e^{-a-b\,x}}{b\,(b\,c - a\,d)\,(c + d\,x)} - $$

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

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

Result (type 8, 17 leaves):

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

Problem 113: Unable to integrate problem.

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

Optimal (type 4, 422 leaves, 15 steps):

$$\frac{2\,d^2\, e^{-a-b\,x}}{b^2\,(b\,c - a\,d)\,(c + d\,x)^3} + \frac{2\,d\, e^{-a-b\,x}}{b^2\,(a + b\,x)\,(c + d\,x)^3} + \frac{3\,d^2\, e^{-a-b\,x}}{b\,(b\,c - a\,d)^2\,(c + d\,x)^2} - $$

$$\frac{d\, e^{-a-b\,x}}{b\,(b\,c - a\,d)\,(c + d\,x)^2} + \frac{6\,d^2\, e^{-a-b\,x}}{(b\,c - a\,d)^3\,(c + d\,x)} - \frac{3\,d\, e^{-a-b\,x}}{(b\,c - a\,d)^2\,(c + d\,x)} + $$

$$\frac{e^{-a-b\,x}}{(b\,c - a\,d)\,(c + d\,x)} - \frac{\text{ExpIntegralE}[-1, a + b\,x]}{b\,(c + d\,x)^2} + \frac{6\,b\,d^2\,\text{ExpIntegralEi}[-a - b\,x]}{(b\,c - a\,d)^4} - $$

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

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

Result (type 8, 17 leaves):

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

Problem 114: Unable to integrate problem.

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

Optimal (type 4, 609 leaves, 20 steps) :

$$\frac{3\, d^2\, e^{-a-b\,x}}{b^2\, (b\,c - a\,d)\, (c + d\,x)^4} + \frac{3\, d\, e^{-a-b\,x}}{b^2\, (a + b\,x)\, (c + d\,x)^4} + \frac{4\, d^2\, e^{-a-b\,x}}{b\, (b\,c - a\,d)^2\, (c + d\,x)^3} - \frac{d\, e^{-a-b\,x}}{b\, (b\,c - a\,d)\, (c + d\,x)^3} +$$

$$\frac{6\, d^2\, e^{-a-b\,x}}{(b\,c - a\,d)^3\, (c + d\,x)^2} - \frac{2\, d\, e^{-a-b\,x}}{(b\,c - a\,d)^2\, (c + d\,x)^2} + \frac{e^{-a-b\,x}}{2\, (b\,c - a\,d)\, (c + d\,x)^2} + \frac{12\, b\, d^2\, e^{-a-b\,x}}{(b\,c - a\,d)^4\, (c + d\,x)} -$$

$$\frac{6\, b\, d\, e^{-a-b\,x}}{(b\,c - a\,d)^3\, (c + d\,x)} + \frac{2\, b\, e^{-a-b\,x}}{(b\,c - a\,d)^2\, (c + d\,x)} - \frac{b\, e^{-a-b\,x}}{2\, d\, (b\,c - a\,d)\, (c + d\,x)} - \frac{\text{ExpIntegralE}[-1,\, a + b\, x]}{b\, (c + d\,x)^3} +$$

$$\frac{12\, b^2\, d^2\, \text{ExpIntegralEi}[-a - b\, x]}{(b\,c - a\,d)^5} - \frac{12\, b^2\, d^2\, e^{-a+\frac{b\,c}{d}}\, \text{ExpIntegralEi}\left[-\frac{b\,(c + d\,x)}{d}\right]}{(b\,c - a\,d)^5} +$$

$$\frac{12\, b^2\, d\, e^{-a+\frac{b\,c}{d}}\, \text{ExpIntegralEi}\left[-\frac{b\,(c + d\,x)}{d}\right]}{(b\,c - a\,d)^4} - \frac{6\, b^2\, e^{-a+\frac{b\,c}{d}}\, \text{ExpIntegralEi}\left[-\frac{b\,(c + d\,x)}{d}\right]}{(b\,c - a\,d)^3} +$$

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

Result (type 8, 17 leaves) :

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

Problem 120: Unable to integrate problem.

$$\int \frac{\text{ExpIntegralE}[-3,\, a + b\, x]}{c + d\, x} \, dx$$

Optimal (type 4, 453 leaves, 16 steps) :

$$-\frac{2\,d^3\,e^{-a-b\,x}}{b^3\,(b\,c-a\,d)\,(c+d\,x)^3}-\frac{2\,d^2\,e^{-a-b\,x}}{b^3\,(a+b\,x)\,(c+d\,x)^3}-\frac{3\,d^3\,e^{-a-b\,x}}{b^2\,(b\,c-a\,d)^2\,(c+d\,x)^2}+$$

$$\frac{d^2\,e^{-a-b\,x}}{b^2\,(b\,c-a\,d)\,(c+d\,x)^2}-\frac{6\,d^3\,e^{-a-b\,x}}{b\,(b\,c-a\,d)^3\,(c+d\,x)}+\frac{3\,d^2\,e^{-a-b\,x}}{b\,(b\,c-a\,d)^2\,(c+d\,x)}-\frac{d\,e^{-a-b\,x}}{b\,(b\,c-a\,d)\,(c+d\,x)}-$$

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

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

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

Result (type 8, 17 leaves):

$$\int\frac{\text{ExpIntegralE}[-3,\,a+b\,x]}{c+d\,x}\,dx$$

Problem 121: Unable to integrate problem.

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

Optimal (type 4, 621 leaves, 21 steps):

$$-\frac{6\,d^3\,e^{-a-b\,x}}{b^3\,(b\,c-a\,d)\,(c+d\,x)^4}-\frac{6\,d^2\,e^{-a-b\,x}}{b^3\,(a+b\,x)\,(c+d\,x)^4}-\frac{8\,d^3\,e^{-a-b\,x}}{b^2\,(b\,c-a\,d)^2\,(c+d\,x)^3}+$$

$$\frac{2\,d^2\,e^{-a-b\,x}}{b^2\,(b\,c-a\,d)\,(c+d\,x)^3}-\frac{12\,d^3\,e^{-a-b\,x}}{b\,(b\,c-a\,d)^3\,(c+d\,x)^2}+\frac{4\,d^2\,e^{-a-b\,x}}{b\,(b\,c-a\,d)^2\,(c+d\,x)^2}-$$

$$\frac{d\,e^{-a-b\,x}}{b\,(b\,c-a\,d)\,(c+d\,x)^2}-\frac{24\,d^3\,e^{-a-b\,x}}{(b\,c-a\,d)^4\,(c+d\,x)}+\frac{12\,d^2\,e^{-a-b\,x}}{(b\,c-a\,d)^3\,(c+d\,x)}-\frac{4\,d\,e^{-a-b\,x}}{(b\,c-a\,d)^2\,(c+d\,x)}+$$

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

$$\frac{24\,b\,d^3\,\text{ExpIntegralEi}[-a-b\,x]}{(b\,c-a\,d)^5}+\frac{24\,b\,d^3\,e^{-a+\frac{b\,c}{d}}\,\text{ExpIntegralEi}\left[-\frac{b\,(c+d\,x)}{d}\right]}{(b\,c-a\,d)^5}-$$

$$\frac{24\,b\,d^2\,e^{-a+\frac{b\,c}{d}}\,\text{ExpIntegralEi}\left[-\frac{b\,(c+d\,x)}{d}\right]}{(b\,c-a\,d)^4}+\frac{12\,b\,d\,e^{-a+\frac{b\,c}{d}}\,\text{ExpIntegralEi}\left[-\frac{b\,(c+d\,x)}{d}\right]}{(b\,c-a\,d)^3}-$$

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

Result (type 8, 17 leaves):

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

Problem 182: Unable to integrate problem.

$$\int \frac{\mathbb{e}^{b\, x}\, \text{ExpIntegralEi}[b\, x]}{x^3}\, \mathbb{d}x$$

Optimal (type 4, 82 leaves, 10 steps):

$$-\frac{\mathbb{e}^{2\, b\, x}}{4\, x^2} - \frac{b\, \mathbb{e}^{2\, b\, x}}{x} - \frac{\mathbb{e}^{b\, x}\, \text{ExpIntegralEi}[b\, x]}{2\, x^2} - \frac{b\, \mathbb{e}^{b\, x}\, \text{ExpIntegralEi}[b\, x]}{2\, x} + \frac{1}{4}\, b^2\, \text{ExpIntegralEi}[b\, x]^2 + 2\, b^2\, \text{ExpIntegralEi}[2\, b\, x]$$

Result (type 8, 15 leaves):

$$\int \frac{\mathbb{e}^{b\, x}\, \text{ExpIntegralEi}[b\, x]}{x^3}\, \mathbb{d}x$$

Problem 183: Unable to integrate problem.

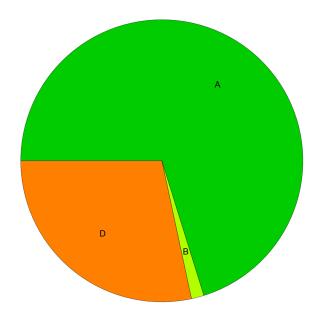$$\int \frac{\mathbb{e}^{b\, x}\, \text{ExpIntegralEi}[b\, x]}{x^2}\, \mathbb{d}x$$

Optimal (type 4, 45 leaves, 5 steps):

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

Result (type 8, 15 leaves):

$$\int \frac{\mathbb{e}^{b\, x}\, \text{ExpIntegralEi}[b\, x]}{x^2}\, \mathbb{d}x$$

Summary of Integration Test Results

208 integration problems

A - 146 optimal antiderivatives

B - 3 more than twice size of optimal antiderivatives

C - 0 unnecessarily complex antiderivatives

D - 59 unable to integrate problems

E - 0 integration timeouts