

Mathematica 7 Test Results

For Integration Problems Involving Special Functions

Problems involving error functions

Unable to integrate:

$$\left\{ \frac{\text{Erf}[b x]^2}{x^7}, x, 12, 0 \right\}$$

$$-\frac{b^2 e^{-2 b^2 x^2}}{15 \pi x^4} + \frac{2 b^4 e^{-2 b^2 x^2}}{9 \pi x^2} - \frac{2 b e^{-b^2 x^2} (3 - 2 b^2 x^2 + 4 b^4 x^4) \text{Erf}[b x]}{45 \sqrt{\pi} x^5} - \frac{1}{90} \left(8 b^6 + \frac{15}{x^6} \right) \text{Erf}[b x]^2 + \frac{28 b^6 \text{ExpIntegralEi}[-2 b^2 x^2]}{45 \pi}$$

$$\int \frac{\text{Erf}[b x]^2}{x^7} dx$$

Unable to integrate:

$$\left\{ \frac{\text{Erf}[b x]^2}{x^5}, x, 8, 0 \right\}$$

$$-\frac{b^2 e^{-2 b^2 x^2}}{3 \pi x^2} - \frac{b e^{-b^2 x^2} (1 - 2 b^2 x^2) \text{Erf}[b x]}{3 \sqrt{\pi} x^3} + \frac{1}{12} \left(4 b^4 - \frac{3}{x^4} \right) \text{Erf}[b x]^2 - \frac{4 b^4 \text{ExpIntegralEi}[-2 b^2 x^2]}{3 \pi}$$

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

Unable to integrate:

$$\left\{ \frac{\text{Erf}[b x]^2}{x^3}, x, 5, 0 \right\}$$

$$-\frac{2 b e^{-b^2 x^2} \text{Erf}[b x]}{\sqrt{\pi} x} - \frac{1}{2} \left(2 b^2 + \frac{1}{x^2} \right) \text{Erf}[b x]^2 + \frac{2 b^2 \text{ExpIntegralEi}[-2 b^2 x^2]}{\pi}$$

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

Unable to integrate:

$$\{x \text{Erf}[a + b x]^2, x, 12, 0\}$$

$$\frac{e^{-2(a+bx)^2}}{2 b^2 \pi} - \frac{e^{-(a+bx)^2} (a - b x) \text{Erf}[a + b x]}{b^2 \sqrt{\pi}} - \frac{(1 + 2 a^2 - 2 b^2 x^2) \text{Erf}[a + b x]^2}{4 b^2} + \frac{a \sqrt{\frac{2}{\pi}} \text{Erf}\left[\sqrt{2} (a + b x)\right]}{b^2}$$

$$\int x \text{Erf}[a + b x]^2 dx$$

Unable to integrate:

$$\{x^2 \text{Erf}[a + b x]^2, x, 18, 0\}$$

$$\begin{aligned}
& -\frac{2a e^{-2(a+bx)^2}}{3b^3\pi} + \frac{e^{-2(a+bx)^2}x}{3b^2\pi} + \frac{2e^{-(a+bx)^2}(1+a^2-abx+b^2x^2)\operatorname{Erf}[a+bx]}{3b^3\sqrt{\pi}} + \\
& \frac{(3a+2a^3+2b^3x^3)\operatorname{Erf}[a+bx]^2}{6b^3} - \frac{(5+12a^2)\operatorname{Erf}\left[\sqrt{2}(a+bx)\right]}{6b^3\sqrt{2\pi}} \\
& \int x^2 \operatorname{Erf}[a+bx]^2 dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{e^{-b^2x^2}\operatorname{Erf}[bx]}{x^8}, x, 16, 0 \right\} \\
& -\frac{b e^{-2b^2x^2}}{21\sqrt{\pi}x^6} + \frac{8b^3 e^{-2b^2x^2}}{105\sqrt{\pi}x^4} - \frac{4b^5 e^{-2b^2x^2}}{21\sqrt{\pi}x^2} - \\
& \frac{e^{-b^2x^2}(15-6b^2x^2+4b^4x^4-8b^6x^6)\operatorname{Erf}[bx]}{105x^7} + \frac{4}{105}b^7\sqrt{\pi}\operatorname{Erf}[bx]^2 - \frac{16b^7\operatorname{ExpIntegralEi}[-2b^2x^2]}{35\sqrt{\pi}} \\
& \int \frac{e^{-b^2x^2}\operatorname{Erf}[bx]}{x^8} dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{e^{-b^2x^2}\operatorname{Erf}[bx]}{x^6}, x, 11, 0 \right\} \\
& -\frac{b e^{-2b^2x^2}}{10\sqrt{\pi}x^4} + \frac{b^3 e^{-2b^2x^2}}{3\sqrt{\pi}x^2} - \frac{e^{-b^2x^2}(3-2b^2x^2+4b^4x^4)\operatorname{Erf}[bx]}{15x^5} - \frac{2}{15}b^5\sqrt{\pi}\operatorname{Erf}[bx]^2 + \frac{14b^5\operatorname{ExpIntegralEi}[-2b^2x^2]}{15\sqrt{\pi}} \\
& \int \frac{e^{-b^2x^2}\operatorname{Erf}[bx]}{x^6} dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{e^{-b^2x^2}\operatorname{Erf}[bx]}{x^4}, x, 7, 0 \right\} \\
& -\frac{b e^{-2b^2x^2}}{3\sqrt{\pi}x^2} - \frac{e^{-b^2x^2}(1-2b^2x^2)\operatorname{Erf}[bx]}{3x^3} + \frac{1}{3}b^3\sqrt{\pi}\operatorname{Erf}[bx]^2 - \frac{4b^3\operatorname{ExpIntegralEi}[-2b^2x^2]}{3\sqrt{\pi}} \\
& \int \frac{e^{-b^2x^2}\operatorname{Erf}[bx]}{x^4} dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{e^{-b^2x^2}\operatorname{Erf}[bx]}{x^2}, x, 4, 0 \right\} \\
& -\frac{e^{-b^2x^2}\operatorname{Erf}[bx]}{x} - \frac{1}{2}b\sqrt{\pi}\operatorname{Erf}[bx]^2 + \frac{b\operatorname{ExpIntegralEi}[-2b^2x^2]}{\sqrt{\pi}} \\
& \int \frac{e^{-b^2x^2}\operatorname{Erf}[bx]}{x^2} dx
\end{aligned}$$

Unable to integrate:

$$\left\{ \frac{\operatorname{Erfc}[b x]^2}{x^7}, x, 12, 0 \right\}$$

$$-\frac{b^2 e^{-2 b^2 x^2}}{15 \pi x^4} + \frac{2 b^4 e^{-2 b^2 x^2}}{9 \pi x^2} + \frac{2 b e^{-b^2 x^2} \operatorname{Erfc}[b x]}{15 \sqrt{\pi} x^5} - \frac{4 b^3 e^{-b^2 x^2} \operatorname{Erfc}[b x]}{45 \sqrt{\pi} x^3} +$$

$$\frac{8 b^5 e^{-b^2 x^2} \operatorname{Erfc}[b x]}{45 \sqrt{\pi} x} - \frac{4}{45} b^6 \operatorname{Erfc}[b x]^2 - \frac{\operatorname{Erfc}[b x]^2}{6 x^6} + \frac{28 b^6 \operatorname{ExpIntegralEi}[-2 b^2 x^2]}{45 \pi}$$

$$\int \frac{\operatorname{Erfc}[b x]^2}{x^7} dx$$

Unable to integrate:

$$\left\{ \frac{\operatorname{Erfc}[b x]^2}{x^5}, x, 8, 0 \right\}$$

$$-\frac{b^2 e^{-2 b^2 x^2}}{3 \pi x^2} + \frac{b e^{-b^2 x^2} \operatorname{Erfc}[b x]}{3 \sqrt{\pi} x^3} - \frac{2 b^3 e^{-b^2 x^2} \operatorname{Erfc}[b x]}{3 \sqrt{\pi} x} + \frac{1}{3} b^4 \operatorname{Erfc}[b x]^2 - \frac{\operatorname{Erfc}[b x]^2}{4 x^4} - \frac{4 b^4 \operatorname{ExpIntegralEi}[-2 b^2 x^2]}{3 \pi}$$

$$\int \frac{\operatorname{Erfc}[b x]^2}{x^5} dx$$

Unable to integrate:

$$\left\{ \frac{\operatorname{Erfc}[b x]^2}{x^3}, x, 5, 0 \right\}$$

$$\frac{2 b e^{-b^2 x^2} \operatorname{Erfc}[b x]}{\sqrt{\pi} x} - b^2 \operatorname{Erfc}[b x]^2 - \frac{\operatorname{Erfc}[b x]^2}{2 x^2} + \frac{2 b^2 \operatorname{ExpIntegralEi}[-2 b^2 x^2]}{\pi}$$

$$\int \frac{\operatorname{Erfc}[b x]^2}{x^3} dx$$

Unable to integrate:

$$\{x \operatorname{Erfc}[b x]^2, x, 6, 0\}$$

$$\frac{e^{-2 b^2 x^2}}{2 b^2 \pi} - \frac{e^{-b^2 x^2} x \operatorname{Erfc}[b x]}{b \sqrt{\pi}} - \frac{\operatorname{Erfc}[b x]^2}{4 b^2} + \frac{1}{2} x^2 \operatorname{Erfc}[b x]^2$$

$$\int x \operatorname{Erfc}[b x]^2 dx$$

Unable to integrate:

$$\{x^3 \operatorname{Erfc}[b x]^2, x, 10, 0\}$$

$$\frac{e^{-2 b^2 x^2}}{2 b^4 \pi} + \frac{e^{-2 b^2 x^2} x^2}{4 b^2 \pi} - \frac{3 e^{-b^2 x^2} x \operatorname{Erfc}[b x]}{4 b^3 \sqrt{\pi}} - \frac{e^{-b^2 x^2} x^3 \operatorname{Erfc}[b x]}{2 b \sqrt{\pi}} - \frac{3 \operatorname{Erfc}[b x]^2}{16 b^4} + \frac{1}{4} x^4 \operatorname{Erfc}[b x]^2$$

$$\int x^3 \operatorname{Erfc}[b x]^2 dx$$

Unable to integrate:

$$\{x^5 \operatorname{Erfc}[b x]^2, x, 15, 0\}$$

$$\frac{11 e^{-2 b^2 x^2}}{12 b^6 \pi} + \frac{7 e^{-2 b^2 x^2} x^2}{12 b^4 \pi} + \frac{e^{-2 b^2 x^2} x^4}{6 b^2 \pi} - \frac{5 e^{-b^2 x^2} x \operatorname{Erfc}[b x]}{4 b^5 \sqrt{\pi}} -$$

$$\frac{5 e^{-b^2 x^2} x^3 \operatorname{Erfc}[b x]}{6 b^3 \sqrt{\pi}} - \frac{e^{-b^2 x^2} x^5 \operatorname{Erfc}[b x]}{3 b \sqrt{\pi}} - \frac{5 \operatorname{Erfc}[b x]^2}{16 b^6} + \frac{1}{6} x^6 \operatorname{Erfc}[b x]^2$$

$$\int x^5 \operatorname{Erfc}[b x]^2 dx$$

Unable to integrate:

$$\{x \operatorname{Erfc}[a + b x]^2, x, 12, 0\}$$

$$\frac{e^{-2(a+bx)^2}}{2 b^2 \pi} + \frac{a \sqrt{\frac{2}{\pi}} \operatorname{Erf}\left[\sqrt{2} (a + b x)\right]}{b^2} + \frac{e^{-(a+bx)^2} (a - b x) \operatorname{Erfc}[a + b x]}{b^2 \sqrt{\pi}} - \frac{(1 + 2 a^2 - 2 b^2 x^2) \operatorname{Erfc}[a + b x]^2}{4 b^2}$$

$$\int x \operatorname{Erfc}[a + b x]^2 dx$$

Unable to integrate:

$$\{x^2 \operatorname{Erfc}[a + b x]^2, x, 18, 0\}$$

$$-\frac{2 a e^{-2(a+bx)^2}}{3 b^3 \pi} + \frac{e^{-2(a+bx)^2} x}{3 b^2 \pi} - \frac{(5 + 12 a^2) \operatorname{Erf}\left[\sqrt{2} (a + b x)\right]}{6 b^3 \sqrt{2 \pi}} -$$

$$\frac{2 e^{-(a+bx)^2} (1 + a^2 - a b x + b^2 x^2) \operatorname{Erfc}[a + b x]}{3 b^3 \sqrt{\pi}} + \frac{(3 a + 2 a^3 + 2 b^3 x^3) \operatorname{Erfc}[a + b x]^2}{6 b^3}$$

$$\int x^2 \operatorname{Erfc}[a + b x]^2 dx$$

Unable to integrate:

$$\left\{ \frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{x^8}, x, 16, 0 \right\}$$

$$\frac{b e^{-2 b^2 x^2}}{21 \sqrt{\pi} x^6} - \frac{8 b^3 e^{-2 b^2 x^2}}{105 \sqrt{\pi} x^4} + \frac{4 b^5 e^{-2 b^2 x^2}}{21 \sqrt{\pi} x^2} - \frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{7 x^7} + \frac{2 b^2 e^{-b^2 x^2} \operatorname{Erfc}[b x]}{35 x^5} -$$

$$\frac{4 b^4 e^{-b^2 x^2} \operatorname{Erfc}[b x]}{105 x^3} + \frac{8 b^6 e^{-b^2 x^2} \operatorname{Erfc}[b x]}{105 x} - \frac{4}{105} b^7 \sqrt{\pi} \operatorname{Erfc}[b x]^2 + \frac{16 b^7 \operatorname{ExpIntegralEi}[-2 b^2 x^2]}{35 \sqrt{\pi}}$$

$$\int \frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{x^8} dx$$

Unable to integrate:

$$\left\{ \frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{x^6}, x, 11, 0 \right\}$$

$$\frac{b e^{-2 b^2 x^2}}{10 \sqrt{\pi} x^4} - \frac{b^3 e^{-2 b^2 x^2}}{3 \sqrt{\pi} x^2} - \frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{5 x^5} + \frac{2 b^2 e^{-b^2 x^2} \operatorname{Erfc}[b x]}{15 x^3} -$$

$$\frac{4 b^4 e^{-b^2 x^2} \operatorname{Erfc}[b x]}{15 x} + \frac{2}{15} b^5 \sqrt{\pi} \operatorname{Erfc}[b x]^2 - \frac{14 b^5 \operatorname{ExpIntegralEi}[-2 b^2 x^2]}{15 \sqrt{\pi}}$$

$$\int \frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{x^6} dx$$

Unable to integrate:

$$\left\{ \frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{x^4}, x, 7, 0 \right\}$$

$$\frac{b e^{-2 b^2 x^2}}{3 \sqrt{\pi} x^2} - \frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{3 x^3} + \frac{2 b^2 e^{-b^2 x^2} \operatorname{Erfc}[b x]}{3 x} - \frac{1}{3} b^3 \sqrt{\pi} \operatorname{Erfc}[b x]^2 + \frac{4 b^3 \operatorname{ExpIntegralEi}[-2 b^2 x^2]}{3 \sqrt{\pi}}$$

$$\int \frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{x^4} dx$$

Unable to integrate:

$$\left\{ \frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{x^2}, x, 4, 0 \right\}$$

$$-\frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{x} + \frac{1}{2} b \sqrt{\pi} \operatorname{Erfc}[b x]^2 - \frac{b \operatorname{ExpIntegralEi}[-2 b^2 x^2]}{\sqrt{\pi}}$$

$$\int \frac{e^{-b^2 x^2} \operatorname{Erfc}[b x]}{x^2} dx$$

Unable to integrate:

$$\left\{ e^{-b^2 x^2} x^2 \operatorname{Erfc}[b x], x, 5, 0 \right\}$$

$$\frac{e^{-2 b^2 x^2}}{4 b^3 \sqrt{\pi}} - \frac{e^{-b^2 x^2} x \operatorname{Erfc}[b x]}{2 b^2} - \frac{\sqrt{\pi} \operatorname{Erfc}[b x]^2}{8 b^3}$$

$$\int e^{-b^2 x^2} x^2 \operatorname{Erfc}[b x] dx$$

Unable to integrate:

$$\left\{ e^{-b^2 x^2} x^4 \operatorname{Erfc}[b x], x, 9, 0 \right\}$$

$$\frac{e^{-2 b^2 x^2}}{2 b^5 \sqrt{\pi}} + \frac{e^{-2 b^2 x^2} x^2}{4 b^3 \sqrt{\pi}} - \frac{3 e^{-b^2 x^2} x \operatorname{Erfc}[b x]}{4 b^4} - \frac{e^{-b^2 x^2} x^3 \operatorname{Erfc}[b x]}{2 b^2} - \frac{3 \sqrt{\pi} \operatorname{Erfc}[b x]^2}{16 b^5}$$

$$\int e^{-b^2 x^2} x^4 \operatorname{Erfc}[b x] dx$$

Unable to integrate:

$$\left\{ e^{-b^2 x^2} x^6 \operatorname{Erfc}[b x], x, 14, 0 \right\}$$

$$\frac{11 e^{-2 b^2 x^2}}{8 b^7 \sqrt{\pi}} + \frac{7 e^{-2 b^2 x^2} x^2}{8 b^5 \sqrt{\pi}} + \frac{e^{-2 b^2 x^2} x^4}{4 b^3 \sqrt{\pi}} - \frac{15 e^{-b^2 x^2} x \operatorname{Erfc}[b x]}{8 b^6} - \frac{5 e^{-b^2 x^2} x^3 \operatorname{Erfc}[b x]}{4 b^4} - \frac{e^{-b^2 x^2} x^5 \operatorname{Erfc}[b x]}{2 b^2} - \frac{15 \sqrt{\pi} \operatorname{Erfc}[b x]^2}{32 b^7}$$

$$\int e^{-b^2 x^2} x^6 \operatorname{Erfc}[b x] dx$$

Unable to integrate:

$$\left\{ \frac{\operatorname{Erfi}[b x]^2}{x^7}, x, 12, 0 \right\}$$

$$-\frac{b^2 e^{2b^2 x^2}}{15 \pi x^4} - \frac{2 b^4 e^{2b^2 x^2}}{9 \pi x^2} - \frac{2 b e^{b^2 x^2} (3 + 2 b^2 x^2 + 4 b^4 x^4) \operatorname{Erfi}[b x]}{45 \sqrt{\pi} x^5} + \frac{1}{90} \left(8 b^6 - \frac{15}{x^6} \right) \operatorname{Erfi}[b x]^2 + \frac{28 b^6 \operatorname{ExpIntegralEi}[2 b^2 x^2]}{45 \pi}$$

$$\int \frac{\operatorname{Erfi}[b x]^2}{x^7} dx$$

Unable to integrate:

$$\left\{ \frac{\operatorname{Erfi}[b x]^2}{x^5}, x, 8, 0 \right\}$$

$$-\frac{b^2 e^{2b^2 x^2}}{3 \pi x^2} - \frac{b e^{b^2 x^2} (1 + 2 b^2 x^2) \operatorname{Erfi}[b x]}{3 \sqrt{\pi} x^3} + \frac{1}{12} \left(4 b^4 - \frac{3}{x^4} \right) \operatorname{Erfi}[b x]^2 + \frac{4 b^4 \operatorname{ExpIntegralEi}[2 b^2 x^2]}{3 \pi}$$

$$\int \frac{\operatorname{Erfi}[b x]^2}{x^5} dx$$

Unable to integrate:

$$\left\{ \frac{\operatorname{Erfi}[b x]^2}{x^3}, x, 5, 0 \right\}$$

$$-\frac{2 b e^{b^2 x^2} \operatorname{Erfi}[b x]}{\sqrt{\pi} x} + \frac{1}{2} \left(2 b^2 - \frac{1}{x^2} \right) \operatorname{Erfi}[b x]^2 + \frac{2 b^2 \operatorname{ExpIntegralEi}[2 b^2 x^2]}{\pi}$$

$$\int \frac{\operatorname{Erfi}[b x]^2}{x^3} dx$$

Unable to integrate:

$$\{x \operatorname{Erfi}[b x]^2, x, 6, 0\}$$

$$\frac{e^{2b^2 x^2}}{2 b^2 \pi} - \frac{e^{b^2 x^2} x \operatorname{Erfi}[b x]}{b \sqrt{\pi}} + \frac{1}{4} \left(\frac{1}{b^2} + 2 x^2 \right) \operatorname{Erfi}[b x]^2$$

$$\int x \operatorname{Erfi}[b x]^2 dx$$

Unable to integrate:

$$\{x^3 \operatorname{Erfi}[b x]^2, x, 10, 0\}$$

$$-\frac{e^{2b^2 x^2}}{2 b^4 \pi} + \frac{e^{2b^2 x^2} x^2}{4 b^2 \pi} + \frac{e^{b^2 x^2} x (3 - 2 b^2 x^2) \operatorname{Erfi}[b x]}{4 b^3 \sqrt{\pi}} - \frac{1}{16} \left(\frac{3}{b^4} - 4 x^4 \right) \operatorname{Erfi}[b x]^2$$

$$\int x^3 \operatorname{Erfi}[b x]^2 dx$$

Unable to integrate:

$$\{x^5 \operatorname{Erfi}[b x]^2, x, 15, 0\}$$

$$\frac{11 e^{2b^2 x^2}}{12 b^6 \pi} - \frac{7 e^{2b^2 x^2} x^2}{12 b^4 \pi} + \frac{e^{2b^2 x^2} x^4}{6 b^2 \pi} - \frac{e^{b^2 x^2} x (15 - 10 b^2 x^2 + 4 b^4 x^4) \operatorname{Erfi}[b x]}{12 b^5 \sqrt{\pi}} + \frac{1}{48} \left(\frac{15}{b^6} + 8 x^6 \right) \operatorname{Erfi}[b x]^2$$

$$\int x^5 \operatorname{Erfi}[b x]^2 dx$$

Unable to integrate:

$$\{x \operatorname{Erfi}[a + b x]^2, x, 12, 0\}$$

$$\frac{e^{2(a+bx)^2}}{2b^2\pi} + \frac{e^{(a+bx)^2}(a-bx)\operatorname{Erfi}[a+bx]}{b^2\sqrt{\pi}} + \frac{(1-2a^2+2b^2x^2)\operatorname{Erfi}[a+bx]^2}{4b^2} - \frac{a\sqrt{\frac{2}{\pi}}\operatorname{Erfi}\left[\sqrt{2}(a+bx)\right]}{b^2}$$

$$\int x \operatorname{Erfi}[a + b x]^2 dx$$

Unable to integrate:

$$\{x^2 \operatorname{Erfi}[a + b x]^2, x, 18, 0\}$$

$$-\frac{2ae^{2(a+bx)^2}}{3b^3\pi} + \frac{e^{2(a+bx)^2}x}{3b^2\pi} + \frac{2e^{(a+bx)^2}(1-a^2+abx-b^2x^2)\operatorname{Erfi}[a+bx]}{3b^3\sqrt{\pi}} -$$

$$\frac{(3a-2a^3-2b^3x^3)\operatorname{Erfi}[a+bx]^2}{6b^3} - \frac{(5-12a^2)\operatorname{Erfi}\left[\sqrt{2}(a+bx)\right]}{6b^3\sqrt{2\pi}}$$

$$\int x^2 \operatorname{Erfi}[a + b x]^2 dx$$

Unable to integrate:

$$\left\{\frac{e^{b^2x^2}\operatorname{Erfi}[bx]}{x^8}, x, 16, 0\right\}$$

$$-\frac{be^{2b^2x^2}}{21\sqrt{\pi}x^6} - \frac{8b^3e^{2b^2x^2}}{105\sqrt{\pi}x^4} - \frac{4b^5e^{2b^2x^2}}{21\sqrt{\pi}x^2} -$$

$$\frac{e^{b^2x^2}(15+6b^2x^2+4b^4x^4+8b^6x^6)\operatorname{Erfi}[bx]}{105x^7} + \frac{4}{105}b^7\sqrt{\pi}\operatorname{Erfi}[bx]^2 + \frac{16b^7\operatorname{ExpIntegralEi}[2b^2x^2]}{35\sqrt{\pi}}$$

$$\int \frac{e^{b^2x^2}\operatorname{Erfi}[bx]}{x^8} dx$$

Unable to integrate:

$$\left\{\frac{e^{b^2x^2}\operatorname{Erfi}[bx]}{x^6}, x, 11, 0\right\}$$

$$-\frac{be^{2b^2x^2}}{10\sqrt{\pi}x^4} - \frac{b^3e^{2b^2x^2}}{3\sqrt{\pi}x^2} - \frac{e^{b^2x^2}(3+2b^2x^2+4b^4x^4)\operatorname{Erfi}[bx]}{15x^5} + \frac{2}{15}b^5\sqrt{\pi}\operatorname{Erfi}[bx]^2 + \frac{14b^5\operatorname{ExpIntegralEi}[2b^2x^2]}{15\sqrt{\pi}}$$

$$\int \frac{e^{b^2x^2}\operatorname{Erfi}[bx]}{x^6} dx$$

Unable to integrate:

$$\left\{\frac{e^{b^2x^2}\operatorname{Erfi}[bx]}{x^4}, x, 7, 0\right\}$$

$$-\frac{be^{2b^2x^2}}{3\sqrt{\pi}x^2} - \frac{e^{b^2x^2}(1+2b^2x^2)\operatorname{Erfi}[bx]}{3x^3} + \frac{1}{3}b^3\sqrt{\pi}\operatorname{Erfi}[bx]^2 + \frac{4b^3\operatorname{ExpIntegralEi}[2b^2x^2]}{3\sqrt{\pi}}$$

$$\int \frac{e^{b^2x^2}\operatorname{Erfi}[bx]}{x^4} dx$$

Unable to integrate:

$$\left\{ \frac{e^{b^2 x^2} \operatorname{Erfi}[b x]}{x^2}, x, 4, 0 \right\}$$

$$- \frac{e^{b^2 x^2} \operatorname{Erfi}[b x]}{x} + \frac{1}{2} b \sqrt{\pi} \operatorname{Erfi}[b x]^2 + \frac{b \operatorname{ExpIntegralEi}[2 b^2 x^2]}{\sqrt{\pi}}$$

$$\int \frac{e^{b^2 x^2} \operatorname{Erfi}[b x]}{x^2} dx$$

Unable to integrate:

$$\left\{ e^{b^2 x^2} x^2 \operatorname{Erfi}[b x], x, 5, 0 \right\}$$

$$- \frac{e^{2 b^2 x^2}}{4 b^3 \sqrt{\pi}} + \frac{e^{b^2 x^2} x \operatorname{Erfi}[b x]}{2 b^2} - \frac{\sqrt{\pi} \operatorname{Erfi}[b x]^2}{8 b^3}$$

$$\int e^{b^2 x^2} x^2 \operatorname{Erfi}[b x] dx$$

Unable to integrate:

$$\left\{ e^{b^2 x^2} x^4 \operatorname{Erfi}[b x], x, 9, 0 \right\}$$

$$\frac{e^{2 b^2 x^2}}{2 b^5 \sqrt{\pi}} - \frac{e^{2 b^2 x^2} x^2}{4 b^3 \sqrt{\pi}} - \frac{e^{b^2 x^2} x (3 - 2 b^2 x^2) \operatorname{Erfi}[b x]}{4 b^4} + \frac{3 \sqrt{\pi} \operatorname{Erfi}[b x]^2}{16 b^5}$$

$$\int e^{b^2 x^2} x^4 \operatorname{Erfi}[b x] dx$$

Unable to integrate:

$$\left\{ e^{b^2 x^2} x^6 \operatorname{Erfi}[b x], x, 14, 0 \right\}$$

$$- \frac{11 e^{2 b^2 x^2}}{8 b^7 \sqrt{\pi}} + \frac{7 e^{2 b^2 x^2} x^2}{8 b^5 \sqrt{\pi}} - \frac{e^{2 b^2 x^2} x^4}{4 b^3 \sqrt{\pi}} + \frac{e^{b^2 x^2} x (15 - 10 b^2 x^2 + 4 b^4 x^4) \operatorname{Erfi}[b x]}{8 b^6} - \frac{15 \sqrt{\pi} \operatorname{Erfi}[b x]^2}{32 b^7}$$

$$\int e^{b^2 x^2} x^6 \operatorname{Erfi}[b x] dx$$

Problems involving Fresnel integrals

Unable to integrate:

$$\left\{ \frac{\text{FresnelS}[b x]^2}{x^9}, x, 17, 0 \right\}$$

$$- \frac{b^2}{336 x^6} + \frac{b^6 \pi^2}{1680 x^2} + \frac{b^2 \cos[b^2 \pi x^2]}{336 x^6} - \frac{b^6 \pi^2 \cos[b^2 \pi x^2]}{336 x^2} + \frac{1}{840} \left(b^8 \pi^4 - \frac{105}{x^8} \right) \text{FresnelS}[b x]^2 -$$

$$\frac{b \text{FresnelS}[b x] \left(b^2 \pi x^2 (3 - b^4 \pi^2 x^4) \cos\left[\frac{1}{2} b^2 \pi x^2\right] + (15 - b^4 \pi^2 x^4) \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{420 x^7} -$$

$$\frac{b^4 \pi \sin[b^2 \pi x^2]}{420 x^4} - \frac{1}{280} b^8 \pi^3 \text{SinIntegral}[b^2 \pi x^2]$$

$$\int \frac{\text{FresnelS}[b x]^2}{x^9} dx$$

Unable to integrate:

$$\left\{ \frac{\text{FresnelS}[b x]^2}{x^5}, x, 8, 0 \right\}$$

$$- \frac{b^2}{24 x^2} + \frac{b^2 \cos[b^2 \pi x^2]}{24 x^2} - \frac{(3 + b^4 \pi^2 x^4) \text{FresnelS}[b x]^2}{12 x^4} -$$

$$\frac{b \text{FresnelS}[b x] \left(b^2 \pi x^2 \cos\left[\frac{1}{2} b^2 \pi x^2\right] + \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{6 x^3} + \frac{1}{12} b^4 \pi \text{SinIntegral}[b^2 \pi x^2]$$

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

Unable to integrate:

$$\{x^3 \text{FresnelS}[b x]^2, x, 10, 0\}$$

$$\frac{3 x^2}{8 b^2 \pi^2} + \frac{x^2 \cos[b^2 \pi x^2]}{8 b^2 \pi^2} + \frac{1}{4} \left(\frac{3}{b^4 \pi^2} + x^4 \right) \text{FresnelS}[b x]^2 +$$

$$\frac{x \text{FresnelS}[b x] \left(b^2 \pi x^2 \cos\left[\frac{1}{2} b^2 \pi x^2\right] - 3 \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{2 b^3 \pi^2} - \frac{\sin[b^2 \pi x^2]}{2 b^4 \pi^3}$$

$$\int x^3 \text{FresnelS}[b x]^2 dx$$

Unable to integrate:

$$\{x^7 \text{FresnelS}[b x]^2, x, 21, 0\}$$

$$- \frac{105 x^2}{16 b^6 \pi^4} + \frac{7 x^6}{48 b^2 \pi^2} - \frac{55 x^2 \cos[b^2 \pi x^2]}{16 b^6 \pi^4} + \frac{x^6 \cos[b^2 \pi x^2]}{16 b^2 \pi^2} - \frac{1}{8} \left(\frac{105}{b^8 \pi^4} - x^8 \right) \text{FresnelS}[b x]^2 -$$

$$\frac{x \text{FresnelS}[b x] \left(b^2 \pi x^2 (35 - b^4 \pi^2 x^4) \cos\left[\frac{1}{2} b^2 \pi x^2\right] - 7 (15 - b^4 \pi^2 x^4) \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{4 b^7 \pi^4} + \frac{10 \sin[b^2 \pi x^2]}{b^8 \pi^5} - \frac{5 x^4 \sin[b^2 \pi x^2]}{8 b^4 \pi^3}$$

$$\int x^7 \text{FresnelS}[b x]^2 dx$$

Unable to integrate:

$$\left\{ \frac{\text{FresnelS}[\text{b x}] \sin\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right]}{\text{x}^8}, \text{x}, 16, 0 \right\}$$

$$- \frac{\text{b}}{84 \text{x}^6} + \frac{\text{b}^5 \pi^2}{420 \text{x}^2} + \frac{\text{b} \cos[\text{b}^2 \pi \text{x}^2]}{84 \text{x}^6} - \frac{\text{b}^5 \pi^2 \cos[\text{b}^2 \pi \text{x}^2]}{84 \text{x}^2} + \frac{1}{210} \text{b}^7 \pi^4 \text{FresnelS}[\text{b x}]^2 -$$

$$\frac{\text{FresnelS}[\text{b x}] \left(\text{b}^2 \pi \text{x}^2 \left(3 - \text{b}^4 \pi^2 \text{x}^4 \right) \cos\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right] + \left(15 - \text{b}^4 \pi^2 \text{x}^4 \right) \sin\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right] \right)}{105 \text{x}^7} -$$

$$\frac{\text{b}^3 \pi \sin[\text{b}^2 \pi \text{x}^2]}{105 \text{x}^4} - \frac{1}{70} \text{b}^7 \pi^3 \text{SinIntegral}[\text{b}^2 \pi \text{x}^2]$$

$$\int \frac{\text{FresnelS}[\text{b x}] \sin\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right]}{\text{x}^8} \text{d x}$$

Unable to integrate:

$$\left\{ \frac{\text{FresnelS}[\text{b x}] \sin\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right]}{\text{x}^4}, \text{x}, 7, 0 \right\}$$

$$- \frac{\text{b}}{12 \text{x}^2} + \frac{\text{b} \cos[\text{b}^2 \pi \text{x}^2]}{12 \text{x}^2} - \frac{1}{6} \text{b}^3 \pi^2 \text{FresnelS}[\text{b x}]^2 -$$

$$\frac{\text{FresnelS}[\text{b x}] \left(\text{b}^2 \pi \text{x}^2 \cos\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right] + \sin\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right] \right)}{3 \text{x}^3} + \frac{1}{6} \text{b}^3 \pi \text{SinIntegral}[\text{b}^2 \pi \text{x}^2]$$

$$\int \frac{\text{FresnelS}[\text{b x}] \sin\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right]}{\text{x}^4} \text{d x}$$

Unable to integrate:

$$\left\{ \text{x}^4 \text{FresnelS}[\text{b x}] \sin\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right], \text{x}, 9, 0 \right\}$$

$$- \frac{3 \text{x}^2}{4 \text{b}^3 \pi^2} - \frac{\text{x}^2 \cos[\text{b}^2 \pi \text{x}^2]}{4 \text{b}^3 \pi^2} - \frac{3 \text{FresnelS}[\text{b x}]^2}{2 \text{b}^5 \pi^2} - \frac{\text{x} \text{FresnelS}[\text{b x}] \left(\text{b}^2 \pi \text{x}^2 \cos\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right] - 3 \sin\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right] \right)}{\text{b}^4 \pi^2} + \frac{\sin[\text{b}^2 \pi \text{x}^2]}{\text{b}^5 \pi^3}$$

$$\int \text{x}^4 \text{FresnelS}[\text{b x}] \sin\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right] \text{d x}$$

Unable to integrate:

$$\left\{ \frac{\cos\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right] \text{FresnelS}[\text{b x}]}{\text{x}^{10}}, \text{x}, 22, 0 \right\}$$

$$\frac{\text{b}^3 \pi}{756 \text{x}^6} - \frac{\text{b}^7 \pi^3}{3780 \text{x}^2} - \frac{11 \text{b}^3 \pi \cos[\text{b}^2 \pi \text{x}^2]}{3024 \text{x}^6} + \frac{5 \text{b}^7 \pi^3 \cos[\text{b}^2 \pi \text{x}^2]}{2016 \text{x}^2} - \frac{\text{b}^9 \pi^5 \text{FresnelS}[\text{b x}]^2}{1890} -$$

$$\frac{\text{FresnelS}[\text{b x}] \left(\left(105 - 3 \text{b}^4 \pi^2 \text{x}^4 + \text{b}^8 \pi^4 \text{x}^8 \right) \cos\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right] - \text{b}^2 \pi \text{x}^2 \left(15 - \text{b}^4 \pi^2 \text{x}^4 \right) \sin\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right] \right)}{945 \text{x}^9} -$$

$$\frac{\text{b} \sin[\text{b}^2 \pi \text{x}^2]}{144 \text{x}^8} + \frac{67 \text{b}^5 \pi^2 \sin[\text{b}^2 \pi \text{x}^2]}{30240 \text{x}^4} + \frac{83 \text{b}^9 \pi^4 \text{SinIntegral}[\text{b}^2 \pi \text{x}^2]}{30240}$$

$$\int \frac{\cos\left[\frac{1}{2} \text{b}^2 \pi \text{x}^2\right] \text{FresnelS}[\text{b x}]}{\text{x}^{10}} \text{d x}$$

Unable to integrate:

$$\left\{ \frac{\cos\left[\frac{1}{2}b^2\pi x^2\right] \text{FresnelS}[bx]}{x^6}, x, 11, 0 \right\}$$

$$\frac{b^3\pi}{60x^2} - \frac{b^3\pi \cos[b^2\pi x^2]}{24x^2} + \frac{1}{30}b^5\pi^3 \text{FresnelS}[bx]^2 -$$

$$\frac{\text{FresnelS}[bx] \left((3 - b^4\pi^2 x^4) \cos\left[\frac{1}{2}b^2\pi x^2\right] - b^2\pi x^2 \sin\left[\frac{1}{2}b^2\pi x^2\right] \right)}{15x^5} - \frac{b \sin[b^2\pi x^2]}{40x^4} - \frac{7}{120}b^5\pi^2 \text{SinIntegral}[b^2\pi x^2]$$

$$\int \frac{\cos\left[\frac{1}{2}b^2\pi x^2\right] \text{FresnelS}[bx]}{x^6} dx$$

Unable to integrate:

$$\left\{ \frac{\cos\left[\frac{1}{2}b^2\pi x^2\right] \text{FresnelS}[bx]}{x^2}, x, 4, 0 \right\}$$

$$- \frac{\cos\left[\frac{1}{2}b^2\pi x^2\right] \text{FresnelS}[bx]}{x} - \frac{1}{2}b\pi \text{FresnelS}[bx]^2 + \frac{1}{4}b \text{SinIntegral}[b^2\pi x^2]$$

$$\int \frac{\cos\left[\frac{1}{2}b^2\pi x^2\right] \text{FresnelS}[bx]}{x^2} dx$$

Unable to integrate:

$$\left\{ x^2 \cos\left[\frac{1}{2}b^2\pi x^2\right] \text{FresnelS}[bx], x, 5, 0 \right\}$$

$$- \frac{x^2}{4b\pi} - \frac{\text{FresnelS}[bx]^2}{2b^3\pi} + \frac{x \text{FresnelS}[bx] \sin\left[\frac{1}{2}b^2\pi x^2\right]}{b^2\pi} + \frac{\sin[b^2\pi x^2]}{4b^3\pi^2}$$

$$\int x^2 \cos\left[\frac{1}{2}b^2\pi x^2\right] \text{FresnelS}[bx] dx$$

Unable to integrate:

$$\left\{ x^6 \cos\left[\frac{1}{2}b^2\pi x^2\right] \text{FresnelS}[bx], x, 14, 0 \right\}$$

$$\frac{15x^2}{4b^5\pi^3} - \frac{x^6}{12b\pi} + \frac{7x^2 \cos[b^2\pi x^2]}{4b^5\pi^3} + \frac{15 \text{FresnelS}[bx]^2}{2b^7\pi^3} +$$

$$\frac{x \text{FresnelS}[bx] \left(5b^2\pi x^2 \cos\left[\frac{1}{2}b^2\pi x^2\right] - (15 - b^4\pi^2 x^4) \sin\left[\frac{1}{2}b^2\pi x^2\right] \right)}{b^6\pi^3} - \frac{11 \sin[b^2\pi x^2]}{2b^7\pi^4} + \frac{x^4 \sin[b^2\pi x^2]}{4b^3\pi^2}$$

$$\int x^6 \cos\left[\frac{1}{2}b^2\pi x^2\right] \text{FresnelS}[bx] dx$$

Unable to integrate:

$$\left\{ \frac{\text{FresnelC}[bx]^2}{x^9}, x, 17, 0 \right\}$$

$$\begin{aligned}
& -\frac{b^2}{336 x^6} + \frac{b^6 \pi^2}{1680 x^2} - \frac{b^2 \cos[b^2 \pi x^2]}{336 x^6} + \frac{b^6 \pi^2 \cos[b^2 \pi x^2]}{336 x^2} + \frac{1}{840} \left(b^8 \pi^4 - \frac{105}{x^8} \right) \text{FresnelC}[b x]^2 - \\
& \frac{b \text{FresnelC}[b x] \left(\left(15 - b^4 \pi^2 x^4 \right) \cos\left[\frac{1}{2} b^2 \pi x^2\right] - b^2 \pi x^2 \left(3 - b^4 \pi^2 x^4 \right) \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{420 x^7} + \\
& \frac{b^4 \pi \sin[b^2 \pi x^2]}{420 x^4} + \frac{1}{280} b^8 \pi^3 \text{SinIntegral}[b^2 \pi x^2] \\
& \int \frac{\text{FresnelC}[b x]^2}{x^9} dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{\text{FresnelC}[b x]^2}{x^5}, x, 8, 0 \right\} \\
& -\frac{b^2}{24 x^2} - \frac{b^2 \cos[b^2 \pi x^2]}{24 x^2} - \frac{(3 + b^4 \pi^2 x^4) \text{FresnelC}[b x]^2}{12 x^4} - \\
& \frac{b \text{FresnelC}[b x] \left(\cos\left[\frac{1}{2} b^2 \pi x^2\right] - b^2 \pi x^2 \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{6 x^3} - \frac{1}{12} b^4 \pi \text{SinIntegral}[b^2 \pi x^2] \\
& \int \frac{\text{FresnelC}[b x]^2}{x^5} dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \{x^3 \text{FresnelC}[b x]^2, x, 10, 0\} \\
& \frac{3 x^2}{8 b^2 \pi^2} - \frac{x^2 \cos[b^2 \pi x^2]}{8 b^2 \pi^2} + \frac{1}{4} \left(\frac{3}{b^4 \pi^2} + x^4 \right) \text{FresnelC}[b x]^2 - \\
& \frac{x \text{FresnelC}[b x] \left(3 \cos\left[\frac{1}{2} b^2 \pi x^2\right] + b^2 \pi x^2 \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{2 b^3 \pi^2} + \frac{\sin[b^2 \pi x^2]}{2 b^4 \pi^3} \\
& \int x^3 \text{FresnelC}[b x]^2 dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \{x^7 \text{FresnelC}[b x]^2, x, 21, 0\} \\
& -\frac{105 x^2}{16 b^6 \pi^4} + \frac{7 x^6}{48 b^2 \pi^2} + \frac{55 x^2 \cos[b^2 \pi x^2]}{16 b^6 \pi^4} - \frac{x^6 \cos[b^2 \pi x^2]}{16 b^2 \pi^2} - \frac{1}{8} \left(\frac{105}{b^8 \pi^4} - x^8 \right) \text{FresnelC}[b x]^2 + \\
& \frac{x \text{FresnelC}[b x] \left(7 \left(15 - b^4 \pi^2 x^4 \right) \cos\left[\frac{1}{2} b^2 \pi x^2\right] + b^2 \pi x^2 \left(35 - b^4 \pi^2 x^4 \right) \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{4 b^7 \pi^4} - \frac{10 \sin[b^2 \pi x^2]}{b^8 \pi^5} + \frac{5 x^4 \sin[b^2 \pi x^2]}{8 b^4 \pi^3} \\
& \int x^7 \text{FresnelC}[b x]^2 dx
\end{aligned}$$

Unable to integrate:

$$\left\{ \frac{\text{FresnelC}[b x] \sin\left[\frac{1}{2} b^2 \pi x^2\right]}{x^{10}}, x, 22, 0 \right\}$$

$$\begin{aligned}
& -\frac{b^3 \pi}{756 x^6} + \frac{b^7 \pi^3}{3780 x^2} - \frac{11 b^3 \pi \cos[b^2 \pi x^2]}{3024 x^6} + \frac{5 b^7 \pi^3 \cos[b^2 \pi x^2]}{2016 x^2} + \frac{b^9 \pi^5 \text{FresnelC}[b x]^2}{1890} - \\
& \frac{\text{FresnelC}[b x] \left(b^2 \pi x^2 (15 - b^4 \pi^2 x^4) \cos\left[\frac{1}{2} b^2 \pi x^2\right] + (105 - 3 b^4 \pi^2 x^4 + b^8 \pi^4 x^8) \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{945 x^9} - \\
& \frac{b \sin[b^2 \pi x^2]}{144 x^8} + \frac{67 b^5 \pi^2 \sin[b^2 \pi x^2]}{30240 x^4} + \frac{83 b^9 \pi^4 \text{SinIntegral}[b^2 \pi x^2]}{30240} \\
& \int \frac{\text{FresnelC}[b x] \sin\left[\frac{1}{2} b^2 \pi x^2\right]}{x^{10}} dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{\text{FresnelC}[b x] \sin\left[\frac{1}{2} b^2 \pi x^2\right]}{x^6}, x, 11, 0 \right\} \\
& -\frac{b^3 \pi}{60 x^2} - \frac{b^3 \pi \cos[b^2 \pi x^2]}{24 x^2} - \frac{1}{30} b^5 \pi^3 \text{FresnelC}[b x]^2 - \\
& \frac{\text{FresnelC}[b x] \left(b^2 \pi x^2 \cos\left[\frac{1}{2} b^2 \pi x^2\right] + (3 - b^4 \pi^2 x^4) \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{15 x^5} - \frac{b \sin[b^2 \pi x^2]}{40 x^4} - \frac{7}{120} b^5 \pi^2 \text{SinIntegral}[b^2 \pi x^2] \\
& \int \frac{\text{FresnelC}[b x] \sin\left[\frac{1}{2} b^2 \pi x^2\right]}{x^6} dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{\text{FresnelC}[b x] \sin\left[\frac{1}{2} b^2 \pi x^2\right]}{x^2}, x, 4, 0 \right\} \\
& \frac{1}{2} b \pi \text{FresnelC}[b x]^2 - \frac{\text{FresnelC}[b x] \sin\left[\frac{1}{2} b^2 \pi x^2\right]}{x} + \frac{1}{4} b \text{SinIntegral}[b^2 \pi x^2] \\
& \int \frac{\text{FresnelC}[b x] \sin\left[\frac{1}{2} b^2 \pi x^2\right]}{x^2} dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ x^2 \text{FresnelC}[b x] \sin\left[\frac{1}{2} b^2 \pi x^2\right], x, 5, 0 \right\} \\
& \frac{x^2}{4 b \pi} - \frac{x \cos\left[\frac{1}{2} b^2 \pi x^2\right] \text{FresnelC}[b x]}{b^2 \pi} + \frac{\text{FresnelC}[b x]^2}{2 b^3 \pi} + \frac{\sin[b^2 \pi x^2]}{4 b^3 \pi^2} \\
& \int x^2 \text{FresnelC}[b x] \sin\left[\frac{1}{2} b^2 \pi x^2\right] dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ x^6 \text{FresnelC}[b x] \sin\left[\frac{1}{2} b^2 \pi x^2\right], x, 14, 0 \right\} \\
& -\frac{15 x^2}{4 b^5 \pi^3} + \frac{x^6}{12 b \pi} + \frac{7 x^2 \cos[b^2 \pi x^2]}{4 b^5 \pi^3} - \frac{15 \text{FresnelC}[b x]^2}{2 b^7 \pi^3} + \\
& \frac{x \text{FresnelC}[b x] \left((15 - b^4 \pi^2 x^4) \cos\left[\frac{1}{2} b^2 \pi x^2\right] + 5 b^2 \pi x^2 \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{b^6 \pi^3} - \frac{11 \sin[b^2 \pi x^2]}{2 b^7 \pi^4} + \frac{x^4 \sin[b^2 \pi x^2]}{4 b^3 \pi^2}
\end{aligned}$$

$$\int x^6 \text{FresnelC}[b x] \sin\left[\frac{1}{2} b^2 \pi x^2\right] dx$$

Unable to integrate:

$$\left\{ \frac{\cos\left[\frac{1}{2} b^2 \pi x^2\right] \text{FresnelC}[b x]}{x^8}, x, 16, 0 \right\}$$

$$- \frac{b}{84 x^6} + \frac{b^5 \pi^2}{420 x^2} - \frac{b \cos[b^2 \pi x^2]}{84 x^6} + \frac{b^5 \pi^2 \cos[b^2 \pi x^2]}{84 x^2} + \frac{1}{210} b^7 \pi^4 \text{FresnelC}[b x]^2 -$$

$$\frac{\text{FresnelC}[b x] \left((15 - b^4 \pi^2 x^4) \cos\left[\frac{1}{2} b^2 \pi x^2\right] - b^2 \pi x^2 (3 - b^4 \pi^2 x^4) \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{105 x^7} +$$

$$\frac{b^3 \pi \sin[b^2 \pi x^2]}{105 x^4} + \frac{1}{70} b^7 \pi^3 \text{SinIntegral}[b^2 \pi x^2]$$

$$\int \frac{\cos\left[\frac{1}{2} b^2 \pi x^2\right] \text{FresnelC}[b x]}{x^8} dx$$

Unable to integrate:

$$\left\{ \frac{\cos\left[\frac{1}{2} b^2 \pi x^2\right] \text{FresnelC}[b x]}{x^4}, x, 7, 0 \right\}$$

$$- \frac{b}{12 x^2} - \frac{b \cos[b^2 \pi x^2]}{12 x^2} - \frac{1}{6} b^3 \pi^2 \text{FresnelC}[b x]^2 -$$

$$\frac{\text{FresnelC}[b x] \left(\cos\left[\frac{1}{2} b^2 \pi x^2\right] - b^2 \pi x^2 \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{3 x^3} - \frac{1}{6} b^3 \pi \text{SinIntegral}[b^2 \pi x^2]$$

$$\int \frac{\cos\left[\frac{1}{2} b^2 \pi x^2\right] \text{FresnelC}[b x]}{x^4} dx$$

Unable to integrate:

$$\left\{ x^4 \cos\left[\frac{1}{2} b^2 \pi x^2\right] \text{FresnelC}[b x], x, 9, 0 \right\}$$

$$- \frac{3 x^2}{4 b^3 \pi^2} + \frac{x^2 \cos[b^2 \pi x^2]}{4 b^3 \pi^2} - \frac{3 \text{FresnelC}[b x]^2}{2 b^5 \pi^2} + \frac{x \text{FresnelC}[b x] \left(3 \cos\left[\frac{1}{2} b^2 \pi x^2\right] + b^2 \pi x^2 \sin\left[\frac{1}{2} b^2 \pi x^2\right] \right)}{b^4 \pi^2} - \frac{\sin[b^2 \pi x^2]}{b^5 \pi^3}$$

$$\int x^4 \cos\left[\frac{1}{2} b^2 \pi x^2\right] \text{FresnelC}[b x] dx$$

Problems involving exponential integrals

Unable to integrate:

$$\{x \operatorname{ExpIntegralEi}[a + b x]^2, x, 14, 0\}$$

$$\frac{e^{2a+2bx}}{2b^2} + \frac{e^{a+bx}(1+a-bx)\operatorname{ExpIntegralEi}[a+bx]}{b^2} - \frac{1}{2}\left(\frac{a^2}{b^2} - x^2\right)\operatorname{ExpIntegralEi}[a+bx]^2 - \frac{(1+2a)\operatorname{ExpIntegralEi}[2(a+bx)]}{b^2}$$

$$\int x \operatorname{ExpIntegralEi}[a + b x]^2 dx$$

Unable to integrate:

$$\{x^2 \operatorname{ExpIntegralEi}[a + b x]^2, x, 32, 0\}$$

$$-\frac{5e^{2a+2bx}}{6b^3} - \frac{2ae^{2a+2bx}}{3b^3} + \frac{e^{2a+2bx}x}{3b^2} - \frac{2e^{a+bx}(2+a+a^2-2bx-abx+b^2x^2)\operatorname{ExpIntegralEi}[a+bx]}{3b^3} +$$

$$\frac{1}{3}\left(\frac{a^3}{b^3} + x^3\right)\operatorname{ExpIntegralEi}[a+bx]^2 + \frac{2(2+3a+3a^2)\operatorname{ExpIntegralEi}[2(a+bx)]}{3b^3}$$

$$\int x^2 \operatorname{ExpIntegralEi}[a + b x]^2 dx$$

Unable to integrate:

$$\left\{\frac{e^{bx}\operatorname{ExpIntegralEi}[bx]}{x^3}, x, 11, 0\right\}$$

$$-\frac{e^{2bx}}{4x^2} - \frac{be^{2bx}}{x} - \frac{e^{bx}(1+bx)\operatorname{ExpIntegralEi}[bx]}{2x^2} + \frac{1}{4}b^2\operatorname{ExpIntegralEi}[bx]^2 + 2b^2\operatorname{ExpIntegralEi}[2bx]$$

$$\int \frac{e^{bx}\operatorname{ExpIntegralEi}[bx]}{x^3} dx$$

Unable to integrate:

$$\left\{\frac{e^{bx}\operatorname{ExpIntegralEi}[bx]}{x^2}, x, 6, 0\right\}$$

$$-\frac{e^{2bx}}{x} - \frac{e^{bx}\operatorname{ExpIntegralEi}[bx]}{x} + \frac{1}{2}b\operatorname{ExpIntegralEi}[bx]^2 + 2b\operatorname{ExpIntegralEi}[2bx]$$

$$\int \frac{e^{bx}\operatorname{ExpIntegralEi}[bx]}{x^2} dx$$

Problems involving trig integrals

Valid but unnecessarily complicated antiderivative:

$$\left\{ \frac{\text{SinIntegral}[a + b x]}{x^3}, x, 12, 0 \right\}$$

$$\frac{b^2 \text{CosIntegral}[b x] (a \text{Cos}[a] - \text{Sin}[a])}{2 a^2} - \frac{b \text{Sin}[a + b x]}{2 a x} -$$

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

$$\frac{1}{4 a^2 x^2} e^{-i (a + b x)} \left(-i a b x + i a b e^{2 i (a + b x)} x + i b^2 e^{i b x} (-1 + e^{2 i a}) x^2 \text{CosIntegral}[b x] + \right.$$

$$a b^2 e^{i b x} x^2 \text{ExpIntegralEi}[-i b x] + a b^2 e^{i (2 a + b x)} x^2 \text{ExpIntegralEi}[i b x] -$$

$$b^2 e^{i b x} (1 + e^{2 i a}) x^2 \text{SinIntegral}[b x] - 2 a^2 e^{i (a + b x)} \text{SinIntegral}[a + b x] + 2 b^2 e^{i (a + b x)} x^2 \text{SinIntegral}[a + b x] \left. \right)$$

Unable to integrate:

$$\{x \text{SinIntegral}[a + b x]^2, x, 19, 0\}$$

$$\frac{\text{Cos}[2 a + 2 b x]}{4 b^2} - \frac{\text{CosIntegral}[2 (a + b x)]}{2 b^2} + \frac{\text{Log}[a + b x]}{2 b^2} -$$

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

$$\int x \text{SinIntegral}[a + b x]^2 dx$$

Unable to integrate:

$$\{x^2 \text{SinIntegral}[a + b x]^2, x, 42, 0\}$$

$$\frac{2 x}{3 b^2} - \frac{a \text{Cos}[2 a + 2 b x]}{3 b^3} + \frac{x \text{Cos}[2 a + 2 b x]}{6 b^2} + \frac{a \text{CosIntegral}[2 (a + b x)]}{b^3} - \frac{a \text{Log}[a + b x]}{b^3} - \frac{2 \text{Cos}[a + b x] \text{Sin}[a + b x]}{3 b^3} -$$

$$\frac{\text{Sin}[2 a + 2 b x]}{12 b^3} - \frac{2 ((2 - a^2 + a b x - b^2 x^2) \text{Cos}[a + b x] - (a - 2 b x) \text{Sin}[a + b x]) \text{SinIntegral}[a + b x]}{3 b^3} +$$

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

$$\int x^2 \text{SinIntegral}[a + b x]^2 dx$$

Unable to integrate:

$$\left\{ \frac{\text{Sin}[b x] \text{SinIntegral}[b x]}{x^3}, x, 16, 0 \right\}$$

$$b^2 \text{CosIntegral}[2 b x] - \frac{b \text{Cos}[b x] \text{Sin}[b x]}{2 x} - \frac{\text{Sin}[b x]^2}{4 x^2} -$$

$$\frac{b \text{Sin}[2 b x]}{4 x} - \frac{(b x \text{Cos}[b x] + \text{Sin}[b x]) \text{SinIntegral}[b x]}{2 x^2} - \frac{1}{4} b^2 \text{SinIntegral}[b x]^2$$

$$\int \frac{\text{Sin}[b x] \text{SinIntegral}[b x]}{x^3} dx$$

Unable to integrate:

$$\left\{ \frac{\text{Cos}[b x] \text{SinIntegral}[b x]}{x^2}, x, 8, 0 \right\}$$

$$b \text{CosIntegral}[2 b x] - \frac{\text{Sin}[2 b x]}{2 x} - \frac{\text{Cos}[b x] \text{SinIntegral}[b x]}{x} - \frac{1}{2} b \text{SinIntegral}[b x]^2$$

$$\int \frac{\text{Cos}[b x] \text{SinIntegral}[b x]}{x^2} dx$$

Valid but unnecessarily complicated antiderivative:

$$\left\{ \frac{\text{CosIntegral}[a + b x]}{x^3}, x, 12, 0 \right\}$$

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

$$\frac{b^2 \text{CosIntegral}[b x] (\text{Cos}[a] + a \text{Sin}[a])}{2 a^2} - \frac{b^2 (a \text{Cos}[a] - \text{Sin}[a]) \text{SinIntegral}[b x]}{2 a^2}$$

$$\frac{1}{4 a^2 x^2} e^{-i (a + b x)} \left(-b^2 e^{i b x} \left(1 + e^{2 i a} \right) x^2 \text{CosIntegral}[b x] - 2 e^{i (a + b x)} \left(a^2 - b^2 x^2 \right) \text{CosIntegral}[a + b x] + \right. \\ \left. i b x \left(a \left(i \left(1 + e^{2 i (a + b x)} \right) - b e^{i b x} x \text{ExpIntegralEi}[-i b x] + b e^{i (2 a + b x)} x \text{ExpIntegralEi}[i b x] \right) - \right. \\ \left. b e^{i b x} \left(-1 + e^{2 i a} \right) x \text{SinIntegral}[b x] \right) \right)$$

Unable to integrate:

$$\{x \text{CosIntegral}[a + b x]^2, x, 19, 0\}$$

$$- \frac{\text{Cos}[2 a + 2 b x]}{4 b^2} - \frac{1}{2} \left(\frac{a^2}{b^2} - x^2 \right) \text{CosIntegral}[a + b x]^2 + \frac{\text{CosIntegral}[2 (a + b x)]}{2 b^2} + \\ \frac{\text{Log}[a + b x]}{2 b^2} - \frac{\text{CosIntegral}[a + b x] (\text{Cos}[a + b x] - (a - b x) \text{Sin}[a + b x])}{b^2} - \frac{a \text{SinIntegral}[2 (a + b x)]}{b^2}$$

$$\int x \text{CosIntegral}[a + b x]^2 dx$$

Unable to integrate:

$$\{x^2 \text{CosIntegral}[a + b x]^2, x, 42, 0\}$$

$$\frac{2 x}{3 b^2} + \frac{a \text{Cos}[2 a + 2 b x]}{3 b^3} - \frac{x \text{Cos}[2 a + 2 b x]}{6 b^2} + \frac{1}{3} \left(\frac{a^3}{b^3} + x^3 \right) \text{CosIntegral}[a + b x]^2 - \frac{a \text{CosIntegral}[2 (a + b x)]}{b^3} - \frac{a \text{Log}[a + b x]}{b^3} + \\ \frac{2 \text{Cos}[a + b x] \text{Sin}[a + b x]}{3 b^3} + \frac{2 \text{CosIntegral}[a + b x] \left((a - 2 b x) \text{Cos}[a + b x] + (2 - a^2 + a b x - b^2 x^2) \text{Sin}[a + b x] \right)}{3 b^3} + \\ \frac{\text{Sin}[2 a + 2 b x]}{12 b^3} - \frac{(2 - 3 a^2) \text{SinIntegral}[2 (a + b x)]}{3 b^3}$$

$$\int x^2 \text{CosIntegral}[a + b x]^2 dx$$

Unable to integrate:

$$\left\{ \frac{\text{CosIntegral}[b x] \text{Sin}[b x]}{x^2}, x, 8, 0 \right\}$$

$$\frac{1}{2} b \text{CosIntegral}[b x]^2 + b \text{CosIntegral}[2 b x] - \frac{\text{CosIntegral}[b x] \text{Sin}[b x]}{x} - \frac{\text{Sin}[2 b x]}{2 x}$$

$$\int \frac{\text{CosIntegral}[b x] \text{Sin}[b x]}{x^2} dx$$

Unable to integrate:

$$\left\{ \frac{\cos[bx] \operatorname{CosIntegral}[bx]}{x^3}, x, 16, 0 \right\}$$

$$-\frac{\cos[bx]^2}{4x^2} - \frac{1}{4}b^2 \operatorname{CosIntegral}[bx]^2 - b^2 \operatorname{CosIntegral}[2bx] +$$

$$\frac{b \cos[bx] \sin[bx]}{2x} - \frac{\operatorname{CosIntegral}[bx] (\cos[bx] - bx \sin[bx])}{2x^2} + \frac{b \sin[2bx]}{4x}$$

$$\int \frac{\cos[bx] \operatorname{CosIntegral}[bx]}{x^3} dx$$

Problems involving hyperbolic integrals

Unable to integrate:

$$\{x \operatorname{SinhIntegral}[a + b x]^2, x, 19, 0\}$$

$$\frac{\cosh[2 a + 2 b x]}{4 b^2} - \frac{\operatorname{CoshIntegral}[2 (a + b x)]}{2 b^2} + \frac{\log[a + b x]}{2 b^2} + \frac{((a - b x) \cosh[a + b x] + \sinh[a + b x]) \operatorname{SinhIntegral}[a + b x]}{b^2} - \frac{1}{2} \left(\frac{a^2}{b^2} - x^2 \right) \operatorname{SinhIntegral}[a + b x]^2 - \frac{a \operatorname{SinhIntegral}[2 (a + b x)]}{b^2} \int x \operatorname{SinhIntegral}[a + b x]^2 dx$$

Unable to integrate:

$$\{x^2 \operatorname{SinhIntegral}[a + b x]^2, x, 42, 0\}$$

$$\frac{2 x}{3 b^2} - \frac{a \cosh[2 a + 2 b x]}{3 b^3} + \frac{x \cosh[2 a + 2 b x]}{6 b^2} + \frac{a \operatorname{CoshIntegral}[2 (a + b x)]}{b^3} - \frac{a \log[a + b x]}{b^3} - \frac{2 \cosh[a + b x] \sinh[a + b x]}{3 b^3} - \frac{\sinh[2 a + 2 b x]}{12 b^3} - \frac{2 ((2 + a^2 - a b x + b^2 x^2) \cosh[a + b x] + (a - 2 b x) \sinh[a + b x]) \operatorname{SinhIntegral}[a + b x]}{3 b^3} + \frac{1}{3} \left(\frac{a^3}{b^3} + x^3 \right) \operatorname{SinhIntegral}[a + b x]^2 + \frac{(2 + 3 a^2) \operatorname{SinhIntegral}[2 (a + b x)]}{3 b^3} \int x^2 \operatorname{SinhIntegral}[a + b x]^2 dx$$

Unable to integrate:

$$\left\{ \frac{\sinh[b x] \operatorname{SinhIntegral}[b x]}{x^3}, x, 16, 0 \right\}$$

$$b^2 \operatorname{CoshIntegral}[2 b x] - \frac{b \cosh[b x] \sinh[b x]}{2 x} - \frac{\sinh[b x]^2}{4 x^2} - \frac{b \sinh[2 b x]}{4 x} - \frac{(b x \cosh[b x] + \sinh[b x]) \operatorname{SinhIntegral}[b x]}{2 x^2} + \frac{1}{4} b^2 \operatorname{SinhIntegral}[b x]^2 \int \frac{\sinh[b x] \operatorname{SinhIntegral}[b x]}{x^3} dx$$

Unable to integrate:

$$\left\{ \frac{\cosh[b x] \operatorname{SinhIntegral}[b x]}{x^2}, x, 8, 0 \right\}$$

$$b \operatorname{CoshIntegral}[2 b x] - \frac{\sinh[2 b x]}{2 x} - \frac{\cosh[b x] \operatorname{SinhIntegral}[b x]}{x} + \frac{1}{2} b \operatorname{SinhIntegral}[b x]^2 \int \frac{\cosh[b x] \operatorname{SinhIntegral}[b x]}{x^2} dx$$

Valid but unnecessarily complicated antiderivative:

$$\{x \sinh[a + b x] \operatorname{SinhIntegral}[c + d x], x, 27, 0\}$$

$$\begin{aligned}
& \frac{\cosh[a - c + (b - d)x]}{2b(b - d)} - \frac{\cosh[a + c + (b + d)x]}{2b(b + d)} - \frac{\text{CoshIntegral}\left[\frac{(b - d)(c + dx)}{d}\right] \left(d \cosh\left[a - \frac{bc}{d}\right] + bc \sinh\left[a - \frac{bc}{d}\right]\right)}{2b^2 d} + \\
& \frac{\text{CoshIntegral}\left[\frac{(b + d)(c + dx)}{d}\right] \left(d \cosh\left[a - \frac{bc}{d}\right] + bc \sinh\left[a - \frac{bc}{d}\right]\right)}{2b^2 d} + \frac{(bx \cosh[a + bx] - \sinh[a + bx]) \text{SinhIntegral}[c + dx]}{b^2} - \\
& \frac{(bc \cosh\left[a - \frac{bc}{d}\right] + d \sinh\left[a - \frac{bc}{d}\right]) \text{SinhIntegral}\left[\frac{(b - d)(c + dx)}{d}\right]}{2b^2 d} + \frac{(bc \cosh\left[a - \frac{bc}{d}\right] + d \sinh\left[a - \frac{bc}{d}\right]) \text{SinhIntegral}\left[\frac{(b + d)(c + dx)}{d}\right]}{2b^2 d} \\
& \frac{1}{4b^2 d (b^2 - d^2)} \left(2b^2 d \cosh[a - c + bx - dx] + 2bd^2 \cosh[a - c + bx - dx] - 2b^2 d \cosh[a + c + (b + d)x] + \right. \\
& 2bd^2 \cosh[a + c + (b + d)x] - 2(b^2 - d^2) \text{CoshIntegral}\left[-\frac{(b - d)(c + dx)}{d}\right] \left(d \cosh\left[a - \frac{bc}{d}\right] + bc \sinh\left[a - \frac{bc}{d}\right]\right) + \\
& 2(b^2 - d^2) \text{CoshIntegral}\left[\frac{(b + d)(c + dx)}{d}\right] \left(d \cosh\left[a - \frac{bc}{d}\right] + bc \sinh\left[a - \frac{bc}{d}\right]\right) + \\
& 4b^3 dx \cosh[a + bx] \text{SinhIntegral}[c + dx] - 4bd^3 x \cosh[a + bx] \text{SinhIntegral}[c + dx] - \\
& 4b^2 d \sinh[a + bx] \text{SinhIntegral}[c + dx] + 4d^3 \sinh[a + bx] \text{SinhIntegral}[c + dx] - \\
& b^3 c \cosh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b - d)(c + dx)}{d}\right] - b^2 d \cosh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b - d)(c + dx)}{d}\right] + \\
& bc d^2 \cosh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b - d)(c + dx)}{d}\right] + d^3 \cosh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b - d)(c + dx)}{d}\right] - \\
& b^3 c \sinh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b - d)(c + dx)}{d}\right] - b^2 d \sinh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b - d)(c + dx)}{d}\right] + \\
& bc d^2 \sinh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b - d)(c + dx)}{d}\right] + d^3 \sinh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b - d)(c + dx)}{d}\right] + \\
& 2b^3 c \cosh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b + d)(c + dx)}{d}\right] - 2bc d^2 \cosh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b + d)(c + dx)}{d}\right] + \\
& 2b^2 d \sinh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b + d)(c + dx)}{d}\right] - 2d^3 \sinh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[\frac{(b + d)(c + dx)}{d}\right] + \\
& b^3 c \cosh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] - b^2 d \cosh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] - \\
& bc d^2 \cosh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] + d^3 \cosh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] - \\
& b^3 c \sinh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] + b^2 d \sinh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] + \\
& bc d^2 \sinh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] - d^3 \sinh\left[a - \frac{bc}{d}\right] \text{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] \left. \right)
\end{aligned}$$

Valid but unnecessarily complicated antiderivative:

{x Cosh[a + bx] SinhIntegral[c + dx], x, 27, 0}

$$\begin{aligned}
& - \frac{\text{CoshIntegral}\left[\frac{(b - d)(c + dx)}{d}\right] \left(bc \cosh\left[a - \frac{bc}{d}\right] + d \sinh\left[a - \frac{bc}{d}\right]\right)}{2b^2 d} + \frac{\text{CoshIntegral}\left[\frac{(b + d)(c + dx)}{d}\right] \left(bc \cosh\left[a - \frac{bc}{d}\right] + d \sinh\left[a - \frac{bc}{d}\right]\right)}{2b^2 d} + \\
& \frac{\sinh[a - c + (b - d)x]}{2b(b - d)} - \frac{\sinh[a + c + (b + d)x]}{2b(b + d)} - \frac{(\cosh[a + bx] - bx \sinh[a + bx]) \text{SinhIntegral}[c + dx]}{b^2} - \\
& \frac{\left(d \cosh\left[a - \frac{bc}{d}\right] + bc \sinh\left[a - \frac{bc}{d}\right]\right) \text{SinhIntegral}\left[\frac{(b - d)(c + dx)}{d}\right]}{2b^2 d} + \frac{\left(d \cosh\left[a - \frac{bc}{d}\right] + bc \sinh\left[a - \frac{bc}{d}\right]\right) \text{SinhIntegral}\left[\frac{(b + d)(c + dx)}{d}\right]}{2b^2 d}
\end{aligned}$$

$$\begin{aligned}
& \frac{1}{4 b^2 d (b^2 - d^2)} \left(-2 (b^2 - d^2) \operatorname{CoshIntegral} \left[-\frac{(b-d)(c+dx)}{d} \right] \left(b c \operatorname{Cosh} \left[a - \frac{bc}{d} \right] + d \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \right) + \right. \\
& 2 (b^2 - d^2) \operatorname{CoshIntegral} \left[\frac{(b+d)(c+dx)}{d} \right] \left(b c \operatorname{Cosh} \left[a - \frac{bc}{d} \right] + d \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \right) + 2 b^2 d \operatorname{Sinh} [a - c + b x - d x] + \\
& 2 b d^2 \operatorname{Sinh} [a - c + b x - d x] - 2 b^2 d \operatorname{Sinh} [a + c + (b+d) x] + 2 b d^2 \operatorname{Sinh} [a + c + (b+d) x] - \\
& 4 b^2 d \operatorname{Cosh} [a + b x] \operatorname{SinhIntegral} [c + d x] + 4 d^3 \operatorname{Cosh} [a + b x] \operatorname{SinhIntegral} [c + d x] + \\
& 4 b^3 d x \operatorname{Sinh} [a + b x] \operatorname{SinhIntegral} [c + d x] - 4 b d^3 x \operatorname{Sinh} [a + b x] \operatorname{SinhIntegral} [c + d x] - \\
& b^3 c \operatorname{Cosh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b-d)(c+dx)}{d} \right] - b^2 d \operatorname{Cosh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b-d)(c+dx)}{d} \right] + \\
& b c d^2 \operatorname{Cosh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b-d)(c+dx)}{d} \right] + d^3 \operatorname{Cosh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b-d)(c+dx)}{d} \right] - \\
& b^3 c \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b-d)(c+dx)}{d} \right] - b^2 d \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b-d)(c+dx)}{d} \right] + \\
& b c d^2 \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b-d)(c+dx)}{d} \right] + d^3 \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b-d)(c+dx)}{d} \right] + \\
& 2 b^2 d \operatorname{Cosh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b+d)(c+dx)}{d} \right] - 2 d^3 \operatorname{Cosh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b+d)(c+dx)}{d} \right] + \\
& 2 b^3 c \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b+d)(c+dx)}{d} \right] - 2 b c d^2 \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[\frac{(b+d)(c+dx)}{d} \right] - \\
& b^3 c \operatorname{Cosh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[c - \frac{bc}{d} - b x + d x \right] + b^2 d \operatorname{Cosh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[c - \frac{bc}{d} - b x + d x \right] + \\
& b c d^2 \operatorname{Cosh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[c - \frac{bc}{d} - b x + d x \right] - d^3 \operatorname{Cosh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[c - \frac{bc}{d} - b x + d x \right] + \\
& b^3 c \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[c - \frac{bc}{d} - b x + d x \right] - b^2 d \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[c - \frac{bc}{d} - b x + d x \right] - \\
& b c d^2 \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[c - \frac{bc}{d} - b x + d x \right] + d^3 \operatorname{Sinh} \left[a - \frac{bc}{d} \right] \operatorname{SinhIntegral} \left[c - \frac{bc}{d} - b x + d x \right] \Big)
\end{aligned}$$

Unable to integrate:

$$\{x \operatorname{CoshIntegral}[a + b x]^2, x, 19, 0\}$$

$$\begin{aligned}
& \frac{\operatorname{Cosh}[2 a + 2 b x]}{4 b^2} - \frac{1}{2} \left(\frac{a^2}{b^2} - x^2 \right) \operatorname{CoshIntegral}[a + b x]^2 - \frac{\operatorname{CoshIntegral}[2 (a + b x)]}{2 b^2} - \frac{\operatorname{Log}[a + b x]}{2 b^2} + \\
& \frac{\operatorname{CoshIntegral}[a + b x] (\operatorname{Cosh}[a + b x] + (a - b x) \operatorname{Sinh}[a + b x])}{b^2} - \frac{a \operatorname{SinhIntegral}[2 (a + b x)]}{b^2}
\end{aligned}$$

$$\int x \operatorname{CoshIntegral}[a + b x]^2 dx$$

Unable to integrate:

$$\{x^2 \operatorname{CoshIntegral}[a + b x]^2, x, 42, 0\}$$

$$\begin{aligned}
& -\frac{2 x}{3 b^2} - \frac{a \operatorname{Cosh}[2 a + 2 b x]}{3 b^3} + \frac{x \operatorname{Cosh}[2 a + 2 b x]}{6 b^2} + \frac{1}{3} \left(\frac{a^3}{b^3} + x^3 \right) \operatorname{CoshIntegral}[a + b x]^2 + \\
& \frac{a \operatorname{CoshIntegral}[2 (a + b x)]}{b^3} + \frac{a \operatorname{Log}[a + b x]}{b^3} - \frac{2 \operatorname{Cosh}[a + b x] \operatorname{Sinh}[a + b x]}{3 b^3} - \\
& \frac{2 \operatorname{CoshIntegral}[a + b x] ((a - 2 b x) \operatorname{Cosh}[a + b x] + (2 + a^2 - a b x + b^2 x^2) \operatorname{Sinh}[a + b x])}{3 b^3} - \\
& \frac{\operatorname{Sinh}[2 a + 2 b x]}{12 b^3} + \frac{(2 + 3 a^2) \operatorname{SinhIntegral}[2 (a + b x)]}{3 b^3}
\end{aligned}$$

$$\int x^2 \operatorname{CoshIntegral}[a + b x]^2 dx$$

Unable to integrate:

$$\left\{ \frac{\text{Cosh}[b x] \text{CoshIntegral}[b x]}{x^3}, x, 16, 0 \right\}$$

$$- \frac{\text{Cosh}[b x]^2}{4 x^2} + \frac{1}{4} b^2 \text{CoshIntegral}[b x]^2 + b^2 \text{CoshIntegral}[2 b x] -$$

$$\frac{b \text{Cosh}[b x] \text{Sinh}[b x]}{2 x} - \frac{\text{CoshIntegral}[b x] (\text{Cosh}[b x] + b x \text{Sinh}[b x])}{2 x^2} - \frac{b \text{Sinh}[2 b x]}{4 x}$$

$$\int \frac{\text{Cosh}[b x] \text{CoshIntegral}[b x]}{x^3} dx$$

Unable to integrate:

$$\left\{ \frac{\text{CoshIntegral}[b x] \text{Sinh}[b x]}{x^2}, x, 8, 0 \right\}$$

$$\frac{1}{2} b \text{CoshIntegral}[b x]^2 + b \text{CoshIntegral}[2 b x] - \frac{\text{CoshIntegral}[b x] \text{Sinh}[b x]}{x} - \frac{\text{Sinh}[2 b x]}{2 x}$$

$$\int \frac{\text{CoshIntegral}[b x] \text{Sinh}[b x]}{x^2} dx$$

Valid but unnecessarily complicated antiderivative:

$$\{x \text{CoshIntegral}[c + d x] \text{Sinh}[a + b x], x, 26, 0\}$$

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

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

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

$$\begin{aligned}
& -\frac{1}{4b^2d(b^2-d^2)} \left(-2b^3c \cosh\left[a - \frac{bc}{d}\right] \operatorname{CoshIntegral}\left[\frac{(b+d)(c+dx)}{d}\right] + 2bc d^2 \cosh\left[a - \frac{bc}{d}\right] \operatorname{CoshIntegral}\left[\frac{(b+d)(c+dx)}{d}\right] - \right. \\
& \quad 2b^2d \operatorname{CoshIntegral}\left[\frac{(b+d)(c+dx)}{d}\right] \sinh\left[a - \frac{bc}{d}\right] + 2d^3 \operatorname{CoshIntegral}\left[\frac{(b+d)(c+dx)}{d}\right] \sinh\left[a - \frac{bc}{d}\right] - \\
& \quad 2(b^2-d^2) \operatorname{CoshIntegral}\left[-\frac{(b-d)(c+dx)}{d}\right] \left(bc \cosh\left[a - \frac{bc}{d}\right] + d \sinh\left[a - \frac{bc}{d}\right] \right) + \\
& \quad 4d(-b^2+d^2) \operatorname{CoshIntegral}[c+dx] (bx \cosh[a+bx] - \sinh[a+bx]) + 2b^2d \sinh[a-c+bx-dx] + \\
& \quad 2bd^2 \sinh[a-c+bx-dx] + 2b^2d \sinh[a+c+(b+d)x] - 2bd^2 \sinh[a+c+(b+d)x] - \\
& \quad b^3c \cosh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b-d)(c+dx)}{d}\right] - b^2d \cosh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b-d)(c+dx)}{d}\right] + \\
& \quad bcd^2 \cosh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b-d)(c+dx)}{d}\right] + d^3 \cosh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b-d)(c+dx)}{d}\right] - \\
& \quad b^3c \sinh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b-d)(c+dx)}{d}\right] - b^2d \sinh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b-d)(c+dx)}{d}\right] + \\
& \quad bcd^2 \sinh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b-d)(c+dx)}{d}\right] + d^3 \sinh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b-d)(c+dx)}{d}\right] - \\
& \quad 2b^2d \cosh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b+d)(c+dx)}{d}\right] + 2d^3 \cosh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b+d)(c+dx)}{d}\right] - \\
& \quad 2b^3c \sinh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b+d)(c+dx)}{d}\right] + 2bcd^2 \sinh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[\frac{(b+d)(c+dx)}{d}\right] - \\
& \quad b^3c \cosh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] + b^2d \cosh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] + \\
& \quad bcd^2 \cosh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] - d^3 \cosh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] + \\
& \quad b^3c \sinh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] - b^2d \sinh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] - \\
& \quad bcd^2 \sinh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] + d^3 \sinh\left[a - \frac{bc}{d}\right] \operatorname{SinhIntegral}\left[c - \frac{bc}{d} - bx + dx\right] \Big)
\end{aligned}$$

Valid but unnecessarily complicated antiderivative:

{x Cosh[a+bx] CoshIntegral[c+dx], x, 26, 0}

$$\begin{aligned}
& -\frac{\cosh[a-c+(b-d)x]}{2b(b-d)} - \frac{\cosh[a+c+(b+d)x]}{2b(b+d)} + \frac{\operatorname{CoshIntegral}\left[\frac{(b-d)(c+dx)}{d}\right] \left(d \cosh\left[a - \frac{bc}{d}\right] + bc \sinh\left[a - \frac{bc}{d}\right] \right)}{2b^2d} + \\
& \frac{\operatorname{CoshIntegral}\left[\frac{(b+d)(c+dx)}{d}\right] \left(d \cosh\left[a - \frac{bc}{d}\right] + bc \sinh\left[a - \frac{bc}{d}\right] \right)}{2b^2d} - \frac{\operatorname{CoshIntegral}[c+dx] (\cosh[a+bx] - bx \sinh[a+bx])}{b^2} + \\
& \frac{\left(bc \cosh\left[a - \frac{bc}{d}\right] + d \sinh\left[a - \frac{bc}{d}\right] \right) \operatorname{SinhIntegral}\left[\frac{(b-d)(c+dx)}{d}\right]}{2b^2d} + \frac{\left(bc \cosh\left[a - \frac{bc}{d}\right] + d \sinh\left[a - \frac{bc}{d}\right] \right) \operatorname{SinhIntegral}\left[\frac{(b+d)(c+dx)}{d}\right]}{2b^2d}
\end{aligned}$$

$$\begin{aligned}
& -\frac{1}{4 b^2 d (b^2 - d^2)} \\
& \left(2 b^2 d \cosh[a - c + b x - d x] + 2 b d^2 \cosh[a - c + b x - d x] + 2 b^2 d \cosh[a + c + (b + d) x] - 2 b d^2 \cosh[a + c + (b + d) x] - \right. \\
& 2 b^2 d \cosh\left[a - \frac{b c}{d}\right] \cosh\text{Integral}\left[\frac{(b + d) (c + d x)}{d}\right] + 2 d^3 \cosh\left[a - \frac{b c}{d}\right] \cosh\text{Integral}\left[\frac{(b + d) (c + d x)}{d}\right] - \\
& 2 b^3 c \cosh\text{Integral}\left[\frac{(b + d) (c + d x)}{d}\right] \sinh\left[a - \frac{b c}{d}\right] + 2 b c d^2 \cosh\text{Integral}\left[\frac{(b + d) (c + d x)}{d}\right] \sinh\left[a - \frac{b c}{d}\right] - \\
& 2 (b^2 - d^2) \cosh\text{Integral}\left[-\frac{(b - d) (c + d x)}{d}\right] \left(d \cosh\left[a - \frac{b c}{d}\right] + b c \sinh\left[a - \frac{b c}{d}\right] \right) + \\
& 4 d (-b^2 + d^2) \cosh\text{Integral}[c + d x] (-\cosh[a + b x] + b x \sinh[a + b x]) - \\
& b^3 c \cosh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b - d) (c + d x)}{d}\right] - b^2 d \cosh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b - d) (c + d x)}{d}\right] + \\
& b c d^2 \cosh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b - d) (c + d x)}{d}\right] + d^3 \cosh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b - d) (c + d x)}{d}\right] - \\
& b^3 c \sinh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b - d) (c + d x)}{d}\right] - b^2 d \sinh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b - d) (c + d x)}{d}\right] + \\
& b c d^2 \sinh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b - d) (c + d x)}{d}\right] + d^3 \sinh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b - d) (c + d x)}{d}\right] - \\
& 2 b^3 c \cosh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b + d) (c + d x)}{d}\right] + 2 b c d^2 \cosh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b + d) (c + d x)}{d}\right] - \\
& 2 b^2 d \sinh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b + d) (c + d x)}{d}\right] + 2 d^3 \sinh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[\frac{(b + d) (c + d x)}{d}\right] + \\
& b^3 c \cosh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[c - \frac{b c}{d} - b x + d x\right] - b^2 d \cosh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[c - \frac{b c}{d} - b x + d x\right] - \\
& b c d^2 \cosh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[c - \frac{b c}{d} - b x + d x\right] + d^3 \cosh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[c - \frac{b c}{d} - b x + d x\right] - \\
& b^3 c \sinh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[c - \frac{b c}{d} - b x + d x\right] + b^2 d \sinh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[c - \frac{b c}{d} - b x + d x\right] + \\
& b c d^2 \sinh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[c - \frac{b c}{d} - b x + d x\right] - d^3 \sinh\left[a - \frac{b c}{d}\right] \sinh\text{Integral}\left[c - \frac{b c}{d} - b x + d x\right] \Big)
\end{aligned}$$

Problems involving gamma functions

Unable to integrate:

$$\{x^m \text{Gamma}[n, a x], x, 1, 0\}$$

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

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

Unable to integrate:

$$\{x^m \text{Gamma}[n, 2 x], x, 1, 0\}$$

$$\frac{x^{1+m} \text{Gamma}[n, 2 x]}{1+m} - \frac{2^{-1-m} \text{Gamma}[1+m+n, 2 x]}{1+m}$$

$$\int x^m \text{Gamma}[n, 2 x] dx$$

Timed out after 60 seconds:

$$\{x^{1000} \text{Gamma}[n, a x], x, 1, 0\}$$

$$\frac{x^{1001} \text{Gamma}[n, a x]}{1001} - \frac{\text{Gamma}[1001+n, a x]}{1001 a^{1001}}$$

???

Unable to integrate:

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

$$- \frac{\text{PolyGamma}[n, a + b x]}{x}$$

$$\int \left(\frac{\text{PolyGamma}[n, a + b x]}{x^2} - \frac{b \text{PolyGamma}[1+n, a + b x]}{x} \right) dx$$

Unable to integrate:

$$\{((a + b x)!)^n \text{PolyGamma}[0, 1 + a + b x], x, 1, 0\}$$

$$\frac{((a + b x)!)^n}{b n}$$

$$\int ((a + b x)!)^n \text{PolyGamma}[0, 1 + a + b x] dx$$

Problems involving zeta functions

Unable to integrate:

$$\left\{ -\frac{b \operatorname{PolyGamma}[2, a + b x]}{x} + \frac{\operatorname{Zeta}[2, a + b x]}{x^2}, x, 3, 0 \right\}$$
$$-\frac{\operatorname{PolyGamma}[1, a + b x]}{x}$$
$$\int \left(-\frac{b \operatorname{PolyGamma}[2, a + b x]}{x} + \frac{\operatorname{Zeta}[2, a + b x]}{x^2} \right) dx$$

Unable to integrate:

$$\left\{ \frac{\operatorname{Zeta}[s, a + b x]}{x^2} + \frac{b s \operatorname{Zeta}[1 + s, a + b x]}{x}, x, 2, 0 \right\}$$
$$-\frac{\operatorname{Zeta}[s, a + b x]}{x}$$
$$\int \left(\frac{\operatorname{Zeta}[s, a + b x]}{x^2} + \frac{b s \operatorname{Zeta}[1 + s, a + b x]}{x} \right) dx$$

Problems involving the polylogarithm function

Unable to integrate:

$$\left\{ \text{PolyLog}\left[-\frac{3}{2}, x\right] + \text{PolyLog}\left[-\frac{1}{2}, x\right], x, 2, 0 \right\}$$

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

$$\int \left(\text{PolyLog}\left[-\frac{3}{2}, x\right] + \text{PolyLog}\left[-\frac{1}{2}, x\right] \right) dx$$

Unable to integrate:

$$\left\{ x \text{PolyLog}\left[n, c f^{a+bx}\right], x, 2, 0 \right\}$$

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

$$\int x \text{PolyLog}\left[n, c f^{a+bx}\right] dx$$

Unable to integrate:

$$\left\{ x^2 \text{PolyLog}\left[n, c f^{a+bx}\right], x, 3, 0 \right\}$$

$$\frac{x^2 \text{PolyLog}\left[1+n, c f^{a+bx}\right]}{b \text{Log}[f]} - \frac{2 x \text{PolyLog}\left[2+n, c f^{a+bx}\right]}{b^2 \text{Log}[f]^2} + \frac{2 \text{PolyLog}\left[3+n, c f^{a+bx}\right]}{b^3 \text{Log}[f]^3}$$

$$\int x^2 \text{PolyLog}\left[n, c f^{a+bx}\right] dx$$

Unable to integrate:

$$\left\{ \frac{\text{Log}[x] \text{PolyLog}[n, a x]}{x}, x, 2, 0 \right\}$$

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

$$\int \frac{\text{Log}[x] \text{PolyLog}[n, a x]}{x} dx$$

Unable to integrate:

$$\left\{ \frac{\text{Log}[x]^2 \text{PolyLog}[n, a x]}{x}, x, 3, 0 \right\}$$

$$\text{Log}[x]^2 \text{PolyLog}[1+n, a x] - 2 \text{Log}[x] \text{PolyLog}[2+n, a x] + 2 \text{PolyLog}[3+n, a x]$$

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

Problems involving the Lambert W (product logarithm) function

Unable to integrate:

$$\{x^3 \text{ProductLog}[a + b x], x, 20, 0\}$$

$$\begin{aligned} & \frac{a^3 (a + b x)}{b^4} - \frac{3 a^2 (a + b x)^2}{4 b^4} + \frac{a (a + b x)^3}{3 b^4} - \frac{(a + b x)^4}{16 b^4} - \frac{3 (a + b x)^4}{512 b^4 \text{ProductLog}[a + b x]^4} - \\ & \frac{2 a (a + b x)^3}{27 b^4 \text{ProductLog}[a + b x]^3} + \frac{3 (a + b x)^4}{128 b^4 \text{ProductLog}[a + b x]^3} - \frac{3 a^2 (a + b x)^2}{8 b^4 \text{ProductLog}[a + b x]^2} + \\ & \frac{2 a (a + b x)^3}{9 b^4 \text{ProductLog}[a + b x]^2} - \frac{3 (a + b x)^4}{64 b^4 \text{ProductLog}[a + b x]^2} - \frac{a^3 (a + b x)}{b^4 \text{ProductLog}[a + b x]} + \frac{3 a^2 (a + b x)^2}{4 b^4 \text{ProductLog}[a + b x]} - \\ & \frac{a (a + b x)^3}{3 b^4 \text{ProductLog}[a + b x]} + \frac{(a + b x)^4}{16 b^4 \text{ProductLog}[a + b x]} - \frac{a^3 (a + b x) \text{ProductLog}[a + b x]}{b^4} + \\ & \frac{3 a^2 (a + b x)^2 \text{ProductLog}[a + b x]}{2 b^4} - \frac{a (a + b x)^3 \text{ProductLog}[a + b x]}{b^4} + \frac{(a + b x)^4 \text{ProductLog}[a + b x]}{4 b^4} \end{aligned}$$

$$\int x^3 \text{ProductLog}[a + b x] \, dx$$

Unable to integrate:

$$\{x^2 \text{ProductLog}[a + b x], x, 14, 0\}$$

$$\begin{aligned} & -\frac{a^2 (a + b x)}{b^3} + \frac{a (a + b x)^2}{2 b^3} - \frac{(a + b x)^3}{9 b^3} + \frac{2 (a + b x)^3}{81 b^3 \text{ProductLog}[a + b x]^3} + \frac{a (a + b x)^2}{4 b^3 \text{ProductLog}[a + b x]^2} - \\ & \frac{2 (a + b x)^3}{27 b^3 \text{ProductLog}[a + b x]^2} + \frac{a^2 (a + b x)}{b^3 \text{ProductLog}[a + b x]} - \frac{a (a + b x)^2}{2 b^3 \text{ProductLog}[a + b x]} + \frac{(a + b x)^3}{9 b^3 \text{ProductLog}[a + b x]} + \\ & \frac{a^2 (a + b x) \text{ProductLog}[a + b x]}{b^3} - \frac{a (a + b x)^2 \text{ProductLog}[a + b x]}{b^3} + \frac{(a + b x)^3 \text{ProductLog}[a + b x]}{3 b^3} \end{aligned}$$

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

Unable to integrate:

$$\{x \text{ProductLog}[a + b x], x, 9, 0\}$$

$$\begin{aligned} & \frac{a (a + b x)}{b^2} - \frac{(a + b x)^2}{4 b^2} - \frac{(a + b x)^2}{8 b^2 \text{ProductLog}[a + b x]^2} - \frac{a (a + b x)}{b^2 \text{ProductLog}[a + b x]} + \\ & \frac{(a + b x)^2}{4 b^2 \text{ProductLog}[a + b x]} - \frac{a (a + b x) \text{ProductLog}[a + b x]}{b^2} + \frac{(a + b x)^2 \text{ProductLog}[a + b x]}{2 b^2} \end{aligned}$$

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

Unable to integrate:

$$\{x^3 \text{ProductLog}[a + b x]^2, x, 24, 0\}$$

$$\begin{aligned}
& -\frac{4a^3(a+bx)}{b^4} + \frac{9a^2(a+bx)^2}{4b^4} - \frac{8a(a+bx)^3}{9b^4} + \frac{5(a+bx)^4}{32b^4} + \frac{15(a+bx)^4}{1024b^4 \text{ProductLog}[a+bx]^4} + \\
& \frac{16a(a+bx)^3}{81b^4 \text{ProductLog}[a+bx]^3} - \frac{15(a+bx)^4}{256b^4 \text{ProductLog}[a+bx]^3} + \frac{9a^2(a+bx)^2}{8b^4 \text{ProductLog}[a+bx]^2} - \frac{16a(a+bx)^3}{27b^4 \text{ProductLog}[a+bx]^2} + \\
& \frac{15(a+bx)^4}{128b^4 \text{ProductLog}[a+bx]^2} + \frac{4a^3(a+bx)}{b^4 \text{ProductLog}[a+bx]} - \frac{9a^2(a+bx)^2}{4b^4 \text{ProductLog}[a+bx]} + \frac{8a(a+bx)^3}{9b^4 \text{ProductLog}[a+bx]} - \\
& \frac{5(a+bx)^4}{32b^4 \text{ProductLog}[a+bx]} + \frac{2a^3(a+bx) \text{ProductLog}[a+bx]}{b^4} - \frac{3a^2(a+bx)^2 \text{ProductLog}[a+bx]}{2b^4} + \\
& \frac{2a(a+bx)^3 \text{ProductLog}[a+bx]}{3b^4} - \frac{(a+bx)^4 \text{ProductLog}[a+bx]}{8b^4} - \frac{a^3(a+bx) \text{ProductLog}[a+bx]^2}{b^4} + \\
& \frac{3a^2(a+bx)^2 \text{ProductLog}[a+bx]^2}{2b^4} - \frac{a(a+bx)^3 \text{ProductLog}[a+bx]^2}{b^4} + \frac{(a+bx)^4 \text{ProductLog}[a+bx]^2}{4b^4}
\end{aligned}$$

$$\int x^3 \text{ProductLog}[a+bx]^2 dx$$

Unable to integrate:

$$\{x^2 \text{ProductLog}[a+bx]^2, x, 17, 0\}$$

$$\begin{aligned}
& \frac{4a^2(a+bx)}{b^3} - \frac{3a(a+bx)^2}{2b^3} + \frac{8(a+bx)^3}{27b^3} - \frac{16(a+bx)^3}{243b^3 \text{ProductLog}[a+bx]^3} - \frac{3a(a+bx)^2}{4b^3 \text{ProductLog}[a+bx]^2} + \\
& \frac{16(a+bx)^3}{81b^3 \text{ProductLog}[a+bx]^2} - \frac{4a^2(a+bx)}{b^3 \text{ProductLog}[a+bx]} + \frac{3a(a+bx)^2}{2b^3 \text{ProductLog}[a+bx]} - \frac{8(a+bx)^3}{27b^3 \text{ProductLog}[a+bx]} - \\
& \frac{2a^2(a+bx) \text{ProductLog}[a+bx]}{b^3} + \frac{a(a+bx)^2 \text{ProductLog}[a+bx]}{b^3} - \frac{2(a+bx)^3 \text{ProductLog}[a+bx]}{9b^3} + \\
& \frac{a^2(a+bx) \text{ProductLog}[a+bx]^2}{b^3} - \frac{a(a+bx)^2 \text{ProductLog}[a+bx]^2}{b^3} + \frac{(a+bx)^3 \text{ProductLog}[a+bx]^2}{3b^3}
\end{aligned}$$

$$\int x^2 \text{ProductLog}[a+bx]^2 dx$$

Unable to integrate:

$$\{x \text{ProductLog}[a+bx]^2, x, 11, 0\}$$

$$\begin{aligned}
& -\frac{4a(a+bx)}{b^2} + \frac{3(a+bx)^2}{4b^2} + \frac{3(a+bx)^2}{8b^2 \text{ProductLog}[a+bx]^2} + \\
& \frac{4a(a+bx)}{b^2 \text{ProductLog}[a+bx]} - \frac{3(a+bx)^2}{4b^2 \text{ProductLog}[a+bx]} + \frac{2a(a+bx) \text{ProductLog}[a+bx]}{b^2} - \\
& \frac{(a+bx)^2 \text{ProductLog}[a+bx]}{2b^2} - \frac{a(a+bx) \text{ProductLog}[a+bx]^2}{b^2} + \frac{(a+bx)^2 \text{ProductLog}[a+bx]^2}{2b^2}
\end{aligned}$$

$$\int x \text{ProductLog}[a+bx]^2 dx$$

Unable to integrate:

$$\left\{ \frac{x^3}{\sqrt{c \text{ProductLog}[a+bx]}}, x, 16, 0 \right\}$$

$$\begin{aligned}
& - \frac{a^3 \sqrt{\pi} \operatorname{Erfi}\left[\frac{\sqrt{c \operatorname{ProductLog}[a+bx]}}{\sqrt{c}}\right]}{2 b^4 \sqrt{c}} - \frac{15 \sqrt{\pi} \operatorname{Erfi}\left[\frac{2 \sqrt{c \operatorname{ProductLog}[a+bx]}}{\sqrt{c}}\right]}{8192 b^4 \sqrt{c}} - \\
& \frac{3 a^2 \sqrt{\frac{\pi}{2}} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a+bx]}}{\sqrt{c}}\right]}{16 b^4 \sqrt{c}} - \frac{a \sqrt{\frac{\pi}{3}} \operatorname{Erfi}\left[\frac{\sqrt{3} \sqrt{c \operatorname{ProductLog}[a+bx]}}{\sqrt{c}}\right]}{24 b^4 \sqrt{c}} + \frac{15 c^3 (a+bx)^4}{2048 b^4 (c \operatorname{ProductLog}[a+bx])^{7/2}} + \\
& \frac{a c^2 (a+bx)^3}{12 b^4 (c \operatorname{ProductLog}[a+bx])^{5/2}} - \frac{5 c^2 (a+bx)^4}{256 b^4 (c \operatorname{ProductLog}[a+bx])^{5/2}} + \frac{3 a^2 c (a+bx)^2}{8 b^4 (c \operatorname{ProductLog}[a+bx])^{3/2}} - \\
& \frac{a c (a+bx)^3}{6 b^4 (c \operatorname{ProductLog}[a+bx])^{3/2}} + \frac{c (a+bx)^4}{32 b^4 (c \operatorname{ProductLog}[a+bx])^{3/2}} - \frac{a^3 (a+bx)}{b^4 \sqrt{c \operatorname{ProductLog}[a+bx]}} + \\
& \frac{3 a^2 (a+bx)^2}{2 b^4 \sqrt{c \operatorname{ProductLog}[a+bx]}} - \frac{a (a+bx)^3}{b^4 \sqrt{c \operatorname{ProductLog}[a+bx]}} + \frac{(a+bx)^4}{4 b^4 \sqrt{c \operatorname{ProductLog}[a+bx]}} \\
& \int \frac{x^3}{\sqrt{c \operatorname{ProductLog}[a+bx]}} dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{x^2}{\sqrt{c \operatorname{ProductLog}[a+bx]}}, x, 11, 0 \right\} \\
& \frac{a^2 \sqrt{\pi} \operatorname{Erfi}\left[\frac{\sqrt{c \operatorname{ProductLog}[a+bx]}}{\sqrt{c}}\right]}{2 b^3 \sqrt{c}} + \frac{a \sqrt{\frac{\pi}{2}} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a+bx]}}{\sqrt{c}}\right]}{8 b^3 \sqrt{c}} + \frac{\sqrt{\frac{\pi}{3}} \operatorname{Erfi}\left[\frac{\sqrt{3} \sqrt{c \operatorname{ProductLog}[a+bx]}}{\sqrt{c}}\right]}{72 b^3 \sqrt{c}} - \\
& \frac{c^2 (a+bx)^3}{36 b^3 (c \operatorname{ProductLog}[a+bx])^{5/2}} - \frac{a c (a+bx)^2}{4 b^3 (c \operatorname{ProductLog}[a+bx])^{3/2}} + \frac{c (a+bx)^3}{18 b^3 (c \operatorname{ProductLog}[a+bx])^{3/2}} + \\
& \frac{a^2 (a+bx)}{b^3 \sqrt{c \operatorname{ProductLog}[a+bx]}} - \frac{a (a+bx)^2}{b^3 \sqrt{c \operatorname{ProductLog}[a+bx]}} + \frac{(a+bx)^3}{3 b^3 \sqrt{c \operatorname{ProductLog}[a+bx]}} \\
& \int \frac{x^2}{\sqrt{c \operatorname{ProductLog}[a+bx]}} dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{x}{\sqrt{c \operatorname{ProductLog}[a+bx]}}, x, 7, 0 \right\} \\
& - \frac{a \sqrt{\pi} \operatorname{Erfi}\left[\frac{\sqrt{c \operatorname{ProductLog}[a+bx]}}{\sqrt{c}}\right]}{2 b^2 \sqrt{c}} - \frac{\sqrt{\frac{\pi}{2}} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a+bx]}}{\sqrt{c}}\right]}{16 b^2 \sqrt{c}} + \\
& \frac{c (a+bx)^2}{8 b^2 (c \operatorname{ProductLog}[a+bx])^{3/2}} - \frac{a (a+bx)}{b^2 \sqrt{c \operatorname{ProductLog}[a+bx]}} + \frac{(a+bx)^2}{2 b^2 \sqrt{c \operatorname{ProductLog}[a+bx]}} \\
& \int \frac{x}{\sqrt{c \operatorname{ProductLog}[a+bx]}} dx
\end{aligned}$$

Unable to integrate:

$$\left\{ \frac{x^3}{\sqrt{-c \operatorname{ProductLog}[a + b x]}}, x, 16, 0 \right\}$$

$$\frac{a^3 \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{-c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{2 b^4 \sqrt{c}} + \frac{15 \sqrt{\pi} \operatorname{Erf}\left[\frac{2 \sqrt{-c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{8192 b^4 \sqrt{c}} +$$

$$\frac{3 a^2 \sqrt{\frac{\pi}{2}} \operatorname{Erf}\left[\frac{\sqrt{2} \sqrt{-c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{16 b^4 \sqrt{c}} + \frac{a \sqrt{\frac{\pi}{3}} \operatorname{Erf}\left[\frac{\sqrt{3} \sqrt{-c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{24 b^4 \sqrt{c}} - \frac{15 c^3 (a + b x)^4}{2048 b^4 (-c \operatorname{ProductLog}[a + b x])^{7/2}} +$$

$$\frac{a c^2 (a + b x)^3}{12 b^4 (-c \operatorname{ProductLog}[a + b x])^{5/2}} - \frac{5 c^2 (a + b x)^4}{256 b^4 (-c \operatorname{ProductLog}[a + b x])^{5/2}} - \frac{3 a^2 c (a + b x)^2}{8 b^4 (-c \operatorname{ProductLog}[a + b x])^{3/2}} +$$

$$\frac{a c (a + b x)^3}{6 b^4 (-c \operatorname{ProductLog}[a + b x])^{3/2}} - \frac{c (a + b x)^4}{32 b^4 (-c \operatorname{ProductLog}[a + b x])^{3/2}} - \frac{a^3 (a + b x)}{b^4 \sqrt{-c \operatorname{ProductLog}[a + b x]}} +$$

$$\frac{3 a^2 (a + b x)^2}{2 b^4 \sqrt{-c \operatorname{ProductLog}[a + b x]}} - \frac{a (a + b x)^3}{b^4 \sqrt{-c \operatorname{ProductLog}[a + b x]}} + \frac{(a + b x)^4}{4 b^4 \sqrt{-c \operatorname{ProductLog}[a + b x]}}$$

$$\int \frac{x^3}{\sqrt{-c \operatorname{ProductLog}[a + b x]}} dx$$

Unable to integrate:

$$\left\{ \frac{x^2}{\sqrt{-c \operatorname{ProductLog}[a + b x]}}, x, 11, 0 \right\}$$

$$- \frac{a^2 \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{-c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{2 b^3 \sqrt{c}} - \frac{a \sqrt{\frac{\pi}{2}} \operatorname{Erf}\left[\frac{\sqrt{2} \sqrt{-c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{8 b^3 \sqrt{c}} - \frac{\sqrt{\frac{\pi}{3}} \operatorname{Erf}\left[\frac{\sqrt{3} \sqrt{-c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{72 b^3 \sqrt{c}} -$$

$$\frac{c^2 (a + b x)^3}{36 b^3 (-c \operatorname{ProductLog}[a + b x])^{5/2}} + \frac{a c (a + b x)^2}{4 b^3 (-c \operatorname{ProductLog}[a + b x])^{3/2}} - \frac{c (a + b x)^3}{18 b^3 (-c \operatorname{ProductLog}[a + b x])^{3/2}} +$$

$$\frac{a^2 (a + b x)}{b^3 \sqrt{-c \operatorname{ProductLog}[a + b x]}} - \frac{a (a + b x)^2}{b^3 \sqrt{-c \operatorname{ProductLog}[a + b x]}} + \frac{(a + b x)^3}{3 b^3 \sqrt{-c \operatorname{ProductLog}[a + b x]}}$$

$$\int \frac{x^2}{\sqrt{-c \operatorname{ProductLog}[a + b x]}} dx$$

Unable to integrate:

$$\left\{ \frac{x}{\sqrt{-c \operatorname{ProductLog}[a + b x]}}, x, 7, 0 \right\}$$

$$\frac{a \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{-c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{2 b^2 \sqrt{c}} + \frac{\sqrt{\frac{\pi}{2}} \operatorname{Erf}\left[\frac{\sqrt{2} \sqrt{-c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{16 b^2 \sqrt{c}} -$$

$$\frac{c (a + b x)^2}{8 b^2 (-c \operatorname{ProductLog}[a + b x])^{3/2}} - \frac{a (a + b x)}{b^2 \sqrt{-c \operatorname{ProductLog}[a + b x]}} + \frac{(a + b x)^2}{2 b^2 \sqrt{-c \operatorname{ProductLog}[a + b x]}}$$

$$\int \frac{x}{\sqrt{-c \operatorname{ProductLog}[a + b x]}} dx$$

Unable to integrate:

$$\left\{x^3 \sqrt{c \operatorname{ProductLog}[a + b x]}, x, 20, 0\right\}$$

$$-\frac{a^3 \sqrt{c} \sqrt{\pi} \operatorname{Erfi}\left[\frac{\sqrt{c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{4 b^4} - \frac{105 \sqrt{c} \sqrt{\pi} \operatorname{Erfi}\left[\frac{2 \sqrt{c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{65536 b^4} - \frac{9 a^2 \sqrt{c} \sqrt{\frac{\pi}{2}} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{64 b^4} -$$

$$\frac{5 a \sqrt{c} \sqrt{\frac{\pi}{3}} \operatorname{Erfi}\left[\frac{\sqrt{3} \sqrt{c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{144 b^4} + \frac{105 c^4 (a + b x)^4}{16384 b^4 (c \operatorname{ProductLog}[a + b x])^{7/2}} + \frac{5 a c^3 (a + b x)^3}{72 b^4 (c \operatorname{ProductLog}[a + b x])^{5/2}} -$$

$$\frac{35 c^3 (a + b x)^4}{2048 b^4 (c \operatorname{ProductLog}[a + b x])^{5/2}} + \frac{9 a^2 c^2 (a + b x)^2}{32 b^4 (c \operatorname{ProductLog}[a + b x])^{3/2}} - \frac{5 a c^2 (a + b x)^3}{36 b^4 (c \operatorname{ProductLog}[a + b x])^{3/2}} +$$

$$\frac{7 c^2 (a + b x)^4}{256 b^4 (c \operatorname{ProductLog}[a + b x])^{3/2}} + \frac{a^3 c (a + b x)}{2 b^4 \sqrt{c \operatorname{ProductLog}[a + b x]}} - \frac{3 a^2 c (a + b x)^2}{8 b^4 \sqrt{c \operatorname{ProductLog}[a + b x]}} +$$

$$\frac{a c (a + b x)^3}{6 b^4 \sqrt{c \operatorname{ProductLog}[a + b x]}} - \frac{c (a + b x)^4}{32 b^4 \sqrt{c \operatorname{ProductLog}[a + b x]}} - \frac{a^3 (a + b x) \sqrt{c \operatorname{ProductLog}[a + b x]}}{b^4} +$$

$$\frac{3 a^2 (a + b x)^2 \sqrt{c \operatorname{ProductLog}[a + b x]}}{2 b^4} - \frac{a (a + b x)^3 \sqrt{c \operatorname{ProductLog}[a + b x]}}{b^4} + \frac{(a + b x)^4 \sqrt{c \operatorname{ProductLog}[a + b x]}}{4 b^4}$$

$$\int x^3 \sqrt{c \operatorname{ProductLog}[a + b x]} \, dx$$

Unable to integrate:

$$\left\{x^2 \sqrt{c \operatorname{ProductLog}[a + b x]}, x, 14, 0\right\}$$

$$\frac{a^2 \sqrt{c} \sqrt{\pi} \operatorname{Erfi}\left[\frac{\sqrt{c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{4 b^3} + \frac{3 a \sqrt{c} \sqrt{\frac{\pi}{2}} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{32 b^3} + \frac{5 \sqrt{c} \sqrt{\frac{\pi}{3}} \operatorname{Erfi}\left[\frac{\sqrt{3} \sqrt{c \operatorname{ProductLog}[a + b x]}}{\sqrt{c}}\right]}{432 b^3} -$$

$$\frac{5 c^3 (a + b x)^3}{216 b^3 (c \operatorname{ProductLog}[a + b x])^{5/2}} - \frac{3 a c^2 (a + b x)^2}{16 b^3 (c \operatorname{ProductLog}[a + b x])^{3/2}} + \frac{5 c^2 (a + b x)^3}{108 b^3 (c \operatorname{ProductLog}[a + b x])^{3/2}} -$$

$$\frac{a^2 c (a + b x)}{2 b^3 \sqrt{c \operatorname{ProductLog}[a + b x]}} + \frac{a c (a + b x)^2}{4 b^3 \sqrt{c \operatorname{ProductLog}[a + b x]}} - \frac{c (a + b x)^3}{18 b^3 \sqrt{c \operatorname{ProductLog}[a + b x]}} +$$

$$\frac{a^2 (a + b x) \sqrt{c \operatorname{ProductLog}[a + b x]}}{b^3} - \frac{a (a + b x)^2 \sqrt{c \operatorname{ProductLog}[a + b x]}}{b^3} + \frac{(a + b x)^3 \sqrt{c \operatorname{ProductLog}[a + b x]}}{3 b^3}$$

$$\int x^2 \sqrt{c \operatorname{ProductLog}[a + b x]} \, dx$$

Unable to integrate:

$$\left\{x \sqrt{c \operatorname{ProductLog}[a + b x]}, x, 9, 0\right\}$$

$$\begin{aligned}
& - \frac{a \sqrt{c} \sqrt{\pi} \operatorname{Erfi}\left[\frac{\sqrt{c \operatorname{ProductLog}[a+b x]}}{\sqrt{c}}\right]}{4 b^2} - \frac{3 \sqrt{c} \sqrt{\frac{\pi}{2}} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a+b x]}}{\sqrt{c}}\right]}{64 b^2} + \\
& \frac{3 c^2 (a+b x)^2}{32 b^2 (c \operatorname{ProductLog}[a+b x])^{3/2}} + \frac{a c (a+b x)}{2 b^2 \sqrt{c \operatorname{ProductLog}[a+b x]}} - \frac{c (a+b x)^2}{8 b^2 \sqrt{c \operatorname{ProductLog}[a+b x]}} - \\
& \frac{a (a+b x) \sqrt{c \operatorname{ProductLog}[a+b x]}}{b^2} + \frac{(a+b x)^2 \sqrt{c \operatorname{ProductLog}[a+b x]}}{2 b^2} \\
& \int x \sqrt{c \operatorname{ProductLog}[a+b x]} \, dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{x^3}{d + d \operatorname{ProductLog}[a+b x]}, x, 12, 0 \right\} \\
& - \frac{3 (a+b x)^4}{128 b^4 d \operatorname{ProductLog}[a+b x]^4} - \frac{2 a (a+b x)^3}{9 b^4 d \operatorname{ProductLog}[a+b x]^3} + \frac{3 (a+b x)^4}{32 b^4 d \operatorname{ProductLog}[a+b x]^3} - \\
& \frac{3 a^2 (a+b x)^2}{4 b^4 d \operatorname{ProductLog}[a+b x]^2} + \frac{2 a (a+b x)^3}{3 b^4 d \operatorname{ProductLog}[a+b x]^2} - \frac{3 (a+b x)^4}{16 b^4 d \operatorname{ProductLog}[a+b x]^2} - \\
& \frac{a^3 (a+b x)}{b^4 d \operatorname{ProductLog}[a+b x]} + \frac{3 a^2 (a+b x)^2}{2 b^4 d \operatorname{ProductLog}[a+b x]} - \frac{a (a+b x)^3}{b^4 d \operatorname{ProductLog}[a+b x]} + \frac{(a+b x)^4}{4 b^4 d \operatorname{ProductLog}[a+b x]} \\
& \int \frac{x^3}{d + d \operatorname{ProductLog}[a+b x]} \, dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{x^2}{d + d \operatorname{ProductLog}[a+b x]}, x, 8, 0 \right\} \\
& \frac{2 (a+b x)^3}{27 b^3 d \operatorname{ProductLog}[a+b x]^3} + \frac{a (a+b x)^2}{2 b^3 d \operatorname{ProductLog}[a+b x]^2} - \frac{2 (a+b x)^3}{9 b^3 d \operatorname{ProductLog}[a+b x]^2} + \\
& \frac{a^2 (a+b x)}{b^3 d \operatorname{ProductLog}[a+b x]} - \frac{a (a+b x)^2}{b^3 d \operatorname{ProductLog}[a+b x]} + \frac{(a+b x)^3}{3 b^3 d \operatorname{ProductLog}[a+b x]} \\
& \int \frac{x^2}{d + d \operatorname{ProductLog}[a+b x]} \, dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{x}{d + d \operatorname{ProductLog}[a+b x]}, x, 5, 0 \right\} \\
& - \frac{(a+b x)^2}{4 b^2 d \operatorname{ProductLog}[a+b x]^2} - \frac{a (a+b x)}{b^2 d \operatorname{ProductLog}[a+b x]} + \frac{(a+b x)^2}{2 b^2 d \operatorname{ProductLog}[a+b x]} \\
& \int \frac{x}{d + d \operatorname{ProductLog}[a+b x]} \, dx
\end{aligned}$$

Unable to integrate:

$$\left\{ \frac{\operatorname{ProductLog}[a x^2]}{x^3}, x, 2, 0 \right\}$$

$$\frac{1}{2} a \operatorname{ExpIntegralEi}\left[-\operatorname{ProductLog}\left[a x^2\right]\right] - \frac{\operatorname{ProductLog}\left[a x^2\right]}{2 x^2}$$

$$\int \frac{\operatorname{ProductLog}\left[a x^2\right]}{x^3} dx$$

Unable to integrate:

$$\left\{\frac{\operatorname{ProductLog}\left[a x^2\right]}{x^5}, x, 2, 0\right\}$$

$$-\frac{1}{2} a^2 \operatorname{ExpIntegralEi}\left[-2 \operatorname{ProductLog}\left[a x^2\right]\right] - \frac{\operatorname{ProductLog}\left[a x^2\right]}{2 x^4}$$

$$\int \frac{\operatorname{ProductLog}\left[a x^2\right]}{x^5} dx$$

Unable to integrate:

$$\left\{\frac{\operatorname{ProductLog}\left[a x^2\right]}{x^7}, x, 3, 0\right\}$$

$$\frac{3}{4} a^3 \operatorname{ExpIntegralEi}\left[-3 \operatorname{ProductLog}\left[a x^2\right]\right] - \frac{\operatorname{ProductLog}\left[a x^2\right]}{4 x^6} + \frac{\operatorname{ProductLog}\left[a x^2\right]^2}{4 x^6}$$

$$\int \frac{\operatorname{ProductLog}\left[a x^2\right]}{x^7} dx$$

Unable to integrate:

$$\left\{\frac{\operatorname{ProductLog}\left[a x^2\right]^2}{x^3}, x, 2, 0\right\}$$

$$-\frac{\operatorname{ProductLog}\left[a x^2\right]}{x^2} - \frac{\operatorname{ProductLog}\left[a x^2\right]^2}{2 x^2}$$

$$\int \frac{\operatorname{ProductLog}\left[a x^2\right]^2}{x^3} dx$$

Unable to integrate:

$$\left\{\frac{\operatorname{ProductLog}\left[a x^2\right]^2}{x^5}, x, 2, 0\right\}$$

$$\frac{1}{2} a^2 \operatorname{ExpIntegralEi}\left[-2 \operatorname{ProductLog}\left[a x^2\right]\right] - \frac{\operatorname{ProductLog}\left[a x^2\right]^2}{4 x^4}$$

$$\int \frac{\operatorname{ProductLog}\left[a x^2\right]^2}{x^5} dx$$

Unable to integrate:

$$\left\{\frac{\operatorname{ProductLog}\left[a x^2\right]^2}{x^7}, x, 2, 0\right\}$$

$$-a^3 \operatorname{ExpIntegralEi}\left[-3 \operatorname{ProductLog}\left[a x^2\right]\right] - \frac{\operatorname{ProductLog}\left[a x^2\right]^2}{2 x^6}$$

$$\int \frac{\text{ProductLog}\left[a x^2\right]^2}{x^7} dx$$

Unable to integrate:

$$\left\{\frac{\text{ProductLog}\left[a x^2\right]^2}{x^9}, x, 3, 0\right\}$$

$$2 a^4 \text{ExpIntegralEi}\left[-4 \text{ProductLog}\left[a x^2\right]\right] - \frac{\text{ProductLog}\left[a x^2\right]^2}{4 x^8} + \frac{\text{ProductLog}\left[a x^2\right]^3}{2 x^8}$$

$$\int \frac{\text{ProductLog}\left[a x^2\right]^2}{x^9} dx$$

Unable to integrate:

$$\left\{\frac{\text{ProductLog}\left[a x^2\right]^3}{x^3}, x, 3, 0\right\}$$

$$-\frac{3 \text{ProductLog}\left[a x^2\right]}{2 x^2} - \frac{3 \text{ProductLog}\left[a x^2\right]^2}{2 x^2} - \frac{\text{ProductLog}\left[a x^2\right]^3}{2 x^2}$$

$$\int \frac{\text{ProductLog}\left[a x^2\right]^3}{x^3} dx$$

Unable to integrate:

$$\left\{\frac{\text{ProductLog}\left[a x^2\right]^3}{x^5}, x, 2, 0\right\}$$

$$-\frac{3 \text{ProductLog}\left[a x^2\right]^2}{8 x^4} - \frac{\text{ProductLog}\left[a x^2\right]^3}{4 x^4}$$

$$\int \frac{\text{ProductLog}\left[a x^2\right]^3}{x^5} dx$$

Unable to integrate:

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

$$\frac{1}{2} a^3 \text{ExpIntegralEi}\left[-3 \text{ProductLog}\left[a x^2\right]\right] - \frac{\text{ProductLog}\left[a x^2\right]^3}{6 x^6}$$

$$\int \frac{\text{ProductLog}\left[a x^2\right]^3}{x^7} dx$$

Unable to integrate:

$$\left\{\frac{\text{ProductLog}\left[a x^2\right]^3}{x^9}, x, 2, 0\right\}$$

$$-\frac{3}{2} a^4 \text{ExpIntegralEi}\left[-4 \text{ProductLog}\left[a x^2\right]\right] - \frac{\text{ProductLog}\left[a x^2\right]^3}{2 x^8}$$

$$\int \frac{\text{ProductLog}\left[a x^2\right]^3}{x^9} dx$$

Unable to integrate:

$$\left\{\frac{1}{x^3 \text{ProductLog}\left[a x^2\right]}, x, 4, 0\right\}$$

$$-\frac{1}{4 x^2}-\frac{1}{4} a \text{ExpIntegralEi}\left[-\text{ProductLog}\left[a x^2\right]\right]-\frac{1}{4 x^2 \text{ProductLog}\left[a x^2\right]}$$

$$\int \frac{1}{x^3 \text{ProductLog}\left[a x^2\right]} dx$$

Unable to integrate:

$$\left\{\frac{1}{x^5 \text{ProductLog}\left[a x^2\right]}, x, 5, 0\right\}$$

$$-\frac{1}{12 x^4}+\frac{1}{3} a^2 \text{ExpIntegralEi}\left[-2 \text{ProductLog}\left[a x^2\right]\right]-\frac{1}{6 x^4 \text{ProductLog}\left[a x^2\right]}+\frac{\text{ProductLog}\left[a x^2\right]}{6 x^4}$$

$$\int \frac{1}{x^5 \text{ProductLog}\left[a x^2\right]} dx$$

Unable to integrate:

$$\left\{\frac{1}{x^3 \text{ProductLog}\left[a x^2\right]^2}, x, 5, 0\right\}$$

$$\frac{1}{6 x^2}+\frac{1}{6} a \text{ExpIntegralEi}\left[-\text{ProductLog}\left[a x^2\right]\right]-\frac{1}{6 x^2 \text{ProductLog}\left[a x^2\right]^2}-\frac{1}{6 x^2 \text{ProductLog}\left[a x^2\right]}$$

$$\int \frac{1}{x^3 \text{ProductLog}\left[a x^2\right]^2} dx$$

Unable to integrate:

$$\left\{x^6 \sqrt{c \text{ProductLog}\left[a x^2\right]}, x, 5, 0\right\}$$

$$\frac{48 c^4 x^7}{16807 \left(c \text{ProductLog}\left[a x^2\right]\right)^{7/2}}-\frac{24 c^3 x^7}{2401 \left(c \text{ProductLog}\left[a x^2\right]\right)^{5/2}}+$$

$$\frac{6 c^2 x^7}{343 \left(c \text{ProductLog}\left[a x^2\right]\right)^{3/2}}-\frac{c x^7}{49 \sqrt{c \text{ProductLog}\left[a x^2\right]}}+\frac{1}{7} x^7 \sqrt{c \text{ProductLog}\left[a x^2\right]}$$

$$\int x^6 \sqrt{c \text{ProductLog}\left[a x^2\right]} dx$$

Unable to integrate:

$$\left\{x^4 \sqrt{c \text{ProductLog}\left[a x^2\right]}, x, 4, 0\right\}$$

$$-\frac{8 c^3 x^5}{625 \left(c \text{ProductLog}\left[a x^2\right]\right)^{5/2}}+\frac{4 c^2 x^5}{125 \left(c \text{ProductLog}\left[a x^2\right]\right)^{3/2}}-\frac{c x^5}{25 \sqrt{c \text{ProductLog}\left[a x^2\right]}}+\frac{1}{5} x^5 \sqrt{c \text{ProductLog}\left[a x^2\right]}$$

$$\int x^4 \sqrt{c \operatorname{ProductLog}[a x^2]} \, dx$$

Unable to integrate:

$$\left\{ x^2 \sqrt{c \operatorname{ProductLog}[a x^2]}, x, 3, 0 \right\}$$

$$\frac{2 c^2 x^3}{27 (c \operatorname{ProductLog}[a x^2])^{3/2}} - \frac{c x^3}{9 \sqrt{c \operatorname{ProductLog}[a x^2]}} + \frac{1}{3} x^3 \sqrt{c \operatorname{ProductLog}[a x^2]}$$

$$\int x^2 \sqrt{c \operatorname{ProductLog}[a x^2]} \, dx$$

Unable to integrate:

$$\left\{ \sqrt{c \operatorname{ProductLog}[a x^2]}, x, 2, 0 \right\}$$

$$-\frac{c x}{\sqrt{c \operatorname{ProductLog}[a x^2]}} + x \sqrt{c \operatorname{ProductLog}[a x^2]}$$

$$\int \sqrt{c \operatorname{ProductLog}[a x^2]} \, dx$$

Unable to integrate:

$$\left\{ \frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{x^3}, x, 2, 0 \right\}$$

$$-\frac{1}{2} a \sqrt{c} \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{\sqrt{c}}\right] - \frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{x^2}$$

$$\int \frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{x^3} \, dx$$

Unable to integrate:

$$\left\{ \frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{x^5}, x, 3, 0 \right\}$$

$$\frac{1}{3} a^2 \sqrt{c} \sqrt{2 \pi} \operatorname{Erf}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^2]}}{\sqrt{c}}\right] - \frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{3 x^4} + \frac{(c \operatorname{ProductLog}[a x^2])^{3/2}}{3 c x^4}$$

$$\int \frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{x^5} \, dx$$

Unable to integrate:

$$\left\{ \frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{x^7}, x, 4, 0 \right\}$$

$$-\frac{2}{5} a^3 \sqrt{c} \sqrt{3 \pi} \operatorname{Erf}\left[\frac{\sqrt{3} \sqrt{c \operatorname{ProductLog}[a x^2]}}{\sqrt{c}}\right] - \frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{5 x^6} + \frac{(c \operatorname{ProductLog}[a x^2])^{3/2}}{15 c x^6} - \frac{2 (c \operatorname{ProductLog}[a x^2])^{5/2}}{5 c^2 x^6}$$

$$\int \frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{x^7} \, dx$$

Unable to integrate:

$$\left\{ \frac{x^6}{\sqrt{c \operatorname{ProductLog}[a x^2]}}, x, 4, 0 \right\}$$

$$\frac{8 c^3 x^7}{2401 (c \operatorname{ProductLog}[a x^2])^{7/2}} - \frac{4 c^2 x^7}{343 (c \operatorname{ProductLog}[a x^2])^{5/2}} + \frac{c x^7}{49 (c \operatorname{ProductLog}[a x^2])^{3/2}} + \frac{x^7}{7 \sqrt{c \operatorname{ProductLog}[a x^2]}}$$

$$\int \frac{x^6}{\sqrt{c \operatorname{ProductLog}[a x^2]}} dx$$

Unable to integrate:

$$\left\{ \frac{x^4}{\sqrt{c \operatorname{ProductLog}[a x^2]}}, x, 3, 0 \right\}$$

$$-\frac{2 c^2 x^5}{125 (c \operatorname{ProductLog}[a x^2])^{5/2}} + \frac{c x^5}{25 (c \operatorname{ProductLog}[a x^2])^{3/2}} + \frac{x^5}{5 \sqrt{c \operatorname{ProductLog}[a x^2]}}$$

$$\int \frac{x^4}{\sqrt{c \operatorname{ProductLog}[a x^2]}} dx$$

Unable to integrate:

$$\left\{ \frac{x^2}{\sqrt{c \operatorname{ProductLog}[a x^2]}}, x, 2, 0 \right\}$$

$$\frac{c x^3}{9 (c \operatorname{ProductLog}[a x^2])^{3/2}} + \frac{x^3}{3 \sqrt{c \operatorname{ProductLog}[a x^2]}}$$

$$\int \frac{x^2}{\sqrt{c \operatorname{ProductLog}[a x^2]}} dx$$

Unable to integrate:

$$\left\{ \frac{1}{x^3 \sqrt{c \operatorname{ProductLog}[a x^2]}}, x, 3, 0 \right\}$$

$$-\frac{a \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{\sqrt{c}}\right]}{3 \sqrt{c}} - \frac{1}{3 x^2 \sqrt{c \operatorname{ProductLog}[a x^2]}} - \frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{3 c x^2}$$

$$\int \frac{1}{x^3 \sqrt{c \operatorname{ProductLog}[a x^2]}} dx$$

Unable to integrate:

$$\left\{ \frac{1}{x^5 \sqrt{c \operatorname{ProductLog}[a x^2]}}, x, 4, 0 \right\}$$

$$\frac{4 a^2 \sqrt{2 \pi} \operatorname{Erf}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^2]}}{\sqrt{c}}\right]}{15 \sqrt{c}} - \frac{1}{5 x^4 \sqrt{c \operatorname{ProductLog}[a x^2]}} - \frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{15 c x^4} + \frac{4 \left(c \operatorname{ProductLog}[a x^2]\right)^{3/2}}{15 c^2 x^4}$$

$$\int \frac{1}{x^5 \sqrt{c \operatorname{ProductLog}[a x^2]}} dx$$

Unable to integrate:

$$\left\{ \frac{1}{x^7 \sqrt{c \operatorname{ProductLog}[a x^2]}}, x, 5, 0 \right\}$$

$$- \frac{12 a^3 \sqrt{3 \pi} \operatorname{Erf}\left[\frac{\sqrt{3} \sqrt{c \operatorname{ProductLog}[a x^2]}}{\sqrt{c}}\right]}{35 \sqrt{c}} - \frac{1}{7 x^6 \sqrt{c \operatorname{ProductLog}[a x^2]}} -$$

$$\frac{\sqrt{c \operatorname{ProductLog}[a x^2]}}{35 c x^6} + \frac{2 \left(c \operatorname{ProductLog}[a x^2]\right)^{3/2}}{35 c^2 x^6} - \frac{12 \left(c \operatorname{ProductLog}[a x^2]\right)^{5/2}}{35 c^3 x^6}$$

$$\int \frac{1}{x^7 \sqrt{c \operatorname{ProductLog}[a x^2]}} dx$$

Unable to integrate:

$$\left\{ \frac{\left(c \operatorname{ProductLog}[a x^2]\right)^p}{x^3}, x, 4, 0 \right\}$$

$$- \frac{e^{2 \operatorname{ProductLog}[a x^2]} \operatorname{Gamma}[-1+p, \operatorname{ProductLog}[a x^2]] \operatorname{ProductLog}[a x^2]^{2-p} \left(c \operatorname{ProductLog}[a x^2]\right)^p}{2 a x^4}$$

$$\frac{e^{2 \operatorname{ProductLog}[a x^2]} \operatorname{Gamma}[p, \operatorname{ProductLog}[a x^2]] \operatorname{ProductLog}[a x^2]^{1-p} \left(c \operatorname{ProductLog}[a x^2]\right)^{1+p}}{2 a c x^4}$$

$$\int \frac{\left(c \operatorname{ProductLog}[a x^2]\right)^p}{x^3} dx$$

Unable to integrate:

$$\left\{ x^4 \operatorname{ProductLog}\left[\frac{a}{x}\right], x, 5, 0 \right\}$$

$$- \frac{125}{24} a^5 \operatorname{ExpIntegralEi}\left[-5 \operatorname{ProductLog}\left[\frac{a}{x}\right]\right] + \frac{1}{4} x^5 \operatorname{ProductLog}\left[\frac{a}{x}\right] -$$

$$\frac{1}{12} x^5 \operatorname{ProductLog}\left[\frac{a}{x}\right]^2 + \frac{5}{24} x^5 \operatorname{ProductLog}\left[\frac{a}{x}\right]^3 - \frac{25}{24} x^5 \operatorname{ProductLog}\left[\frac{a}{x}\right]^4$$

$$\int x^4 \operatorname{ProductLog}\left[\frac{a}{x}\right] dx$$

Unable to integrate:

$$\left\{ x^3 \operatorname{ProductLog}\left[\frac{a}{x}\right], x, 4, 0 \right\}$$

$$\frac{8}{3} a^4 \operatorname{ExpIntegralEi}\left[-4 \operatorname{ProductLog}\left[\frac{a}{x}\right]\right] + \frac{1}{3} x^4 \operatorname{ProductLog}\left[\frac{a}{x}\right] - \frac{1}{6} x^4 \operatorname{ProductLog}\left[\frac{a}{x}\right]^2 + \frac{2}{3} x^4 \operatorname{ProductLog}\left[\frac{a}{x}\right]^3$$

$$\int x^3 \operatorname{ProductLog}\left[\frac{a}{x}\right] dx$$

Unable to integrate:

$$\left\{x^2 \operatorname{ProductLog}\left[\frac{a}{x}\right], x, 3, 0\right\}$$

$$-\frac{3}{2} a^3 \operatorname{ExpIntegralEi}\left[-3 \operatorname{ProductLog}\left[\frac{a}{x}\right]\right] + \frac{1}{2} x^3 \operatorname{ProductLog}\left[\frac{a}{x}\right] - \frac{1}{2} x^3 \operatorname{ProductLog}\left[\frac{a}{x}\right]^2$$

$$\int x^2 \operatorname{ProductLog}\left[\frac{a}{x}\right] dx$$

Unable to integrate:

$$\left\{x \operatorname{ProductLog}\left[\frac{a}{x}\right], x, 2, 0\right\}$$

$$a^2 \operatorname{ExpIntegralEi}\left[-2 \operatorname{ProductLog}\left[\frac{a}{x}\right]\right] + x^2 \operatorname{ProductLog}\left[\frac{a}{x}\right]$$

$$\int x \operatorname{ProductLog}\left[\frac{a}{x}\right] dx$$

Unable to integrate:

$$\left\{\operatorname{ProductLog}\left[\frac{a}{x}\right], x, 3, 0\right\}$$

$$-a \operatorname{ExpIntegralEi}\left[-\operatorname{ProductLog}\left[\frac{a}{x}\right]\right] + x \operatorname{ProductLog}\left[\frac{a}{x}\right]$$

$$\int \operatorname{ProductLog}\left[\frac{a}{x}\right] dx$$

Unable to integrate:

$$\left\{\frac{\operatorname{ProductLog}\left[\frac{a}{x}\right]}{x^3}, x, 5, 0\right\}$$

$$\frac{1}{4 x^2} + \frac{1}{8 x^2 \operatorname{ProductLog}\left[\frac{a}{x}\right]^2} - \frac{1}{4 x^2 \operatorname{ProductLog}\left[\frac{a}{x}\right]} - \frac{\operatorname{ProductLog}\left[\frac{a}{x}\right]}{2 x^2}$$

$$\int \frac{\operatorname{ProductLog}\left[\frac{a}{x}\right]}{x^3} dx$$

Unable to integrate:

$$\left\{\frac{\operatorname{ProductLog}\left[\frac{a}{x}\right]}{x^4}, x, 6, 0\right\}$$

$$\frac{1}{9 x^3} - \frac{2}{81 x^3 \operatorname{ProductLog}\left[\frac{a}{x}\right]^3} + \frac{2}{27 x^3 \operatorname{ProductLog}\left[\frac{a}{x}\right]^2} - \frac{1}{9 x^3 \operatorname{ProductLog}\left[\frac{a}{x}\right]} - \frac{\operatorname{ProductLog}\left[\frac{a}{x}\right]}{3 x^3}$$

$$\int \frac{\operatorname{ProductLog}\left[\frac{a}{x}\right]}{x^4} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{x}\right]}{x^5}, x, 7, 0 \right\}$$

$$\frac{1}{16 x^4} + \frac{3}{512 x^4 \text{ProductLog}\left[\frac{a}{x}\right]^4} - \frac{3}{128 x^4 \text{ProductLog}\left[\frac{a}{x}\right]^3} + \frac{3}{64 x^4 \text{ProductLog}\left[\frac{a}{x}\right]^2} - \frac{1}{16 x^4 \text{ProductLog}\left[\frac{a}{x}\right]} - \frac{\text{ProductLog}\left[\frac{a}{x}\right]}{4 x^4}$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{x}\right]}{x^5} dx$$

Unable to integrate:

$$\left\{ x^4 \text{ProductLog}\left[\frac{a}{x}\right]^2, x, 4, 0 \right\}$$

$$\frac{25}{3} a^5 \text{ExpIntegralEi}\left[-5 \text{ProductLog}\left[\frac{a}{x}\right]\right] + \frac{1}{3} x^5 \text{ProductLog}\left[\frac{a}{x}\right]^2 - \frac{1}{3} x^5 \text{ProductLog}\left[\frac{a}{x}\right]^3 + \frac{5}{3} x^5 \text{ProductLog}\left[\frac{a}{x}\right]^4$$

$$\int x^4 \text{ProductLog}\left[\frac{a}{x}\right]^2 dx$$

Unable to integrate:

$$\left\{ x^3 \text{ProductLog}\left[\frac{a}{x}\right]^2, x, 3, 0 \right\}$$

$$-4 a^4 \text{ExpIntegralEi}\left[-4 \text{ProductLog}\left[\frac{a}{x}\right]\right] + \frac{1}{2} x^4 \text{ProductLog}\left[\frac{a}{x}\right]^2 - x^4 \text{ProductLog}\left[\frac{a}{x}\right]^3$$

$$\int x^3 \text{ProductLog}\left[\frac{a}{x}\right]^2 dx$$

Unable to integrate:

$$\left\{ x^2 \text{ProductLog}\left[\frac{a}{x}\right]^2, x, 2, 0 \right\}$$

$$2 a^3 \text{ExpIntegralEi}\left[-3 \text{ProductLog}\left[\frac{a}{x}\right]\right] + x^3 \text{ProductLog}\left[\frac{a}{x}\right]^2$$

$$\int x^2 \text{ProductLog}\left[\frac{a}{x}\right]^2 dx$$

Unable to integrate:

$$\left\{ x \text{ProductLog}\left[\frac{a}{x}\right]^2, x, 2, 0 \right\}$$

$$-a^2 \text{ExpIntegralEi}\left[-2 \text{ProductLog}\left[\frac{a}{x}\right]\right] + \frac{1}{2} x^2 \text{ProductLog}\left[\frac{a}{x}\right]^2$$

$$\int x \text{ProductLog}\left[\frac{a}{x}\right]^2 dx$$

Unable to integrate:

$$\left\{ \text{ProductLog}\left[\frac{a}{x}\right]^2, x, 2, 0 \right\}$$

$$2 x \text{ProductLog}\left[\frac{a}{x}\right] + x \text{ProductLog}\left[\frac{a}{x}\right]^2$$

$$\int \text{ProductLog}\left[\frac{a}{x}\right]^2 dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{x}\right]^2}{x^3}, x, 6, 0 \right\}$$

$$-\frac{3}{4x^2} - \frac{3}{8x^2 \text{ProductLog}\left[\frac{a}{x}\right]^2} + \frac{3}{4x^2 \text{ProductLog}\left[\frac{a}{x}\right]} + \frac{\text{ProductLog}\left[\frac{a}{x}\right]}{2x^2} - \frac{\text{ProductLog}\left[\frac{a}{x}\right]^2}{2x^2}$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{x}\right]^2}{x^3} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{x}\right]^2}{x^4}, x, 7, 0 \right\}$$

$$-\frac{8}{27x^3} + \frac{16}{243x^3 \text{ProductLog}\left[\frac{a}{x}\right]^3} - \frac{16}{81x^3 \text{ProductLog}\left[\frac{a}{x}\right]^2} + \frac{8}{27x^3 \text{ProductLog}\left[\frac{a}{x}\right]} + \frac{2 \text{ProductLog}\left[\frac{a}{x}\right]}{9x^3} - \frac{\text{ProductLog}\left[\frac{a}{x}\right]^2}{3x^3}$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{x}\right]^2}{x^4} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{x}\right]^2}{x^5}, x, 8, 0 \right\}$$

$$-\frac{5}{32x^4} - \frac{15}{1024x^4 \text{ProductLog}\left[\frac{a}{x}\right]^4} + \frac{15}{256x^4 \text{ProductLog}\left[\frac{a}{x}\right]^3} - \frac{15}{128x^4 \text{ProductLog}\left[\frac{a}{x}\right]^2} + \frac{5}{32x^4 \text{ProductLog}\left[\frac{a}{x}\right]} + \frac{\text{ProductLog}\left[\frac{a}{x}\right]}{8x^4} - \frac{\text{ProductLog}\left[\frac{a}{x}\right]^2}{4x^4}$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{x}\right]^2}{x^5} dx$$

Unable to integrate:

$$\left\{ x^3 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}, x, 5, 0 \right\}$$

$$-\frac{256}{105} a^4 \sqrt{\pi} \text{Erf}\left[2 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right] + \frac{2}{7} x^4 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]} - \frac{2}{35} x^4 \text{ProductLog}\left[\frac{a}{x}\right]^{3/2} + \frac{16}{105} x^4 \text{ProductLog}\left[\frac{a}{x}\right]^{5/2} - \frac{128}{105} x^4 \text{ProductLog}\left[\frac{a}{x}\right]^{7/2}$$

$$\int x^3 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]} dx$$

Unable to integrate:

$$\left\{x^2 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}, x, 4, 0\right\}$$

$$\frac{4}{5} a^3 \sqrt{3\pi} \text{Erf}\left[\sqrt{3} \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right] + \frac{2}{5} x^3 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]} - \frac{2}{15} x^3 \text{ProductLog}\left[\frac{a}{x}\right]^{3/2} + \frac{4}{5} x^3 \text{ProductLog}\left[\frac{a}{x}\right]^{5/2}$$

$$\int x^2 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]} dx$$

Unable to integrate:

$$\left\{x \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}, x, 3, 0\right\}$$

$$-\frac{2}{3} a^2 \sqrt{2\pi} \text{Erf}\left[\sqrt{2} \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right] + \frac{2}{3} x^2 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]} - \frac{2}{3} x^2 \text{ProductLog}\left[\frac{a}{x}\right]^{3/2}$$

$$\int x \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]} dx$$

Unable to integrate:

$$\left\{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}, x, 2, 0\right\}$$

$$a \sqrt{\pi} \text{Erf}\left[\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right] + 2x \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}$$

$$\int \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]} dx$$

Unable to integrate:

$$\left\{\frac{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}{x^3}, x, 4, 0\right\}$$

$$\frac{3 \sqrt{\frac{\pi}{2}} \text{Erfi}\left[\sqrt{2} \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right]}{64 a^2} - \frac{3}{32 x^2 \text{ProductLog}\left[\frac{a}{x}\right]^{3/2}} + \frac{1}{8 x^2 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} - \frac{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}{2 x^2}$$

$$\int \frac{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}{x^3} dx$$

Unable to integrate:

$$\left\{ \frac{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}{x^4}, x, 5, 0 \right\}$$

$$- \frac{5 \sqrt{\frac{\pi}{3}} \text{Erfi}\left[\sqrt{3} \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right]}{432 a^3} + \frac{5}{216 x^3 \text{ProductLog}\left[\frac{a}{x}\right]^{5/2}} -$$

$$\frac{5}{108 x^3 \text{ProductLog}\left[\frac{a}{x}\right]^{3/2}} + \frac{1}{18 x^3 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} - \frac{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}{3 x^3}$$

$$\int \frac{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}{x^4} dx$$

Unable to integrate:

$$\left\{ \frac{x^3}{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}, x, 6, 0 \right\}$$

$$- \frac{2048}{945} a^4 \sqrt{\pi} \text{Erf}\left[2 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right] + \frac{2 x^4}{9 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} + \frac{2}{63} x^4 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]} -$$

$$\frac{16}{315} x^4 \text{ProductLog}\left[\frac{a}{x}\right]^{3/2} + \frac{128}{945} x^4 \text{ProductLog}\left[\frac{a}{x}\right]^{5/2} - \frac{1024}{945} x^4 \text{ProductLog}\left[\frac{a}{x}\right]^{7/2}$$

$$\int \frac{x^3}{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} dx$$

Unable to integrate:

$$\left\{ \frac{x^2}{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}, x, 5, 0 \right\}$$

$$\frac{24}{35} a^3 \sqrt{3 \pi} \text{Erf}\left[\sqrt{3} \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right] + \frac{2 x^3}{7 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} +$$

$$\frac{2}{35} x^3 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]} - \frac{4}{35} x^3 \text{ProductLog}\left[\frac{a}{x}\right]^{3/2} + \frac{24}{35} x^3 \text{ProductLog}\left[\frac{a}{x}\right]^{5/2}$$

$$\int \frac{x^2}{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} dx$$

Unable to integrate:

$$\left\{ \frac{x}{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}, x, 4, 0 \right\}$$

$$-\frac{8}{15} a^2 \sqrt{2\pi} \text{Erf}\left[\sqrt{2} \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right] + \frac{2x^2}{5\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} + \frac{2}{15} x^2 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]} - \frac{8}{15} x^2 \text{ProductLog}\left[\frac{a}{x}\right]^{3/2}$$

$$\int \frac{x}{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} dx$$

Unable to integrate:

$$\left\{ \frac{1}{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}, x, 4, 0 \right\}$$

$$\frac{2}{3} a \sqrt{\pi} \text{Erf}\left[\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right] + \frac{2x}{3\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} + \frac{2}{3} x \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}$$

$$\int \frac{1}{\sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} dx$$

Unable to integrate:

$$\left\{ \frac{1}{x^3 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}, x, 3, 0 \right\}$$

$$\frac{\sqrt{\frac{\pi}{2}} \text{Erfi}\left[\sqrt{2} \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right]}{16a^2} - \frac{1}{8x^2 \text{ProductLog}\left[\frac{a}{x}\right]^{3/2}} - \frac{1}{2x^2 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}$$

$$\int \frac{1}{x^3 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} dx$$

Unable to integrate:

$$\left\{ \frac{1}{x^4 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}, x, 4, 0 \right\}$$

$$-\frac{\sqrt{\frac{\pi}{3}} \text{Erfi}\left[\sqrt{3} \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}\right]}{72a^3} + \frac{1}{36x^3 \text{ProductLog}\left[\frac{a}{x}\right]^{5/2}} - \frac{1}{18x^3 \text{ProductLog}\left[\frac{a}{x}\right]^{3/2}} - \frac{1}{3x^3 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}}$$

$$\int \frac{1}{x^4 \sqrt{\text{ProductLog}\left[\frac{a}{x}\right]}} dx$$

Unable to integrate:

$$\left\{x^2 \left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^p, x, 4, 0\right\}$$

$$\frac{3^{3-p} e^{4 \operatorname{ProductLog}\left[\frac{a}{x}\right]} x^4 \operatorname{Gamma}\left[-3+p, 3 \operatorname{ProductLog}\left[\frac{a}{x}\right]\right] \operatorname{ProductLog}\left[\frac{a}{x}\right]^{4-p} \left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^p}{a} +$$

$$\frac{3^{2-p} e^{4 \operatorname{ProductLog}\left[\frac{a}{x}\right]} x^4 \operatorname{Gamma}\left[-2+p, 3 \operatorname{ProductLog}\left[\frac{a}{x}\right]\right] \operatorname{ProductLog}\left[\frac{a}{x}\right]^{3-p} \left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^{1+p}}{a c}$$

$$\int x^2 \left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^p dx$$

Unable to integrate:

$$\left\{x \left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^p, x, 4, 0\right\}$$

$$\frac{2^{2-p} e^{3 \operatorname{ProductLog}\left[\frac{a}{x}\right]} x^3 \operatorname{Gamma}\left[-2+p, 2 \operatorname{ProductLog}\left[\frac{a}{x}\right]\right] \operatorname{ProductLog}\left[\frac{a}{x}\right]^{3-p} \left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^p}{a} +$$

$$\frac{2^{1-p} e^{3 \operatorname{ProductLog}\left[\frac{a}{x}\right]} x^3 \operatorname{Gamma}\left[-1+p, 2 \operatorname{ProductLog}\left[\frac{a}{x}\right]\right] \operatorname{ProductLog}\left[\frac{a}{x}\right]^{2-p} \left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^{1+p}}{a c}$$

$$\int x \left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^p dx$$

Unable to integrate:

$$\left\{\frac{\left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^p}{x^3}, x, 4, 0\right\}$$

$$-\frac{2^{-2-p} e^{-\operatorname{ProductLog}\left[\frac{a}{x}\right]} \operatorname{Gamma}\left[2+p, -2 \operatorname{ProductLog}\left[\frac{a}{x}\right]\right] \left(-\operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^{-1-p} \left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^p}{a x} -$$

$$\frac{2^{-3-p} e^{-\operatorname{ProductLog}\left[\frac{a}{x}\right]} \operatorname{Gamma}\left[3+p, -2 \operatorname{ProductLog}\left[\frac{a}{x}\right]\right] \left(-\operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^{-2-p} \left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^{1+p}}{a c x}$$

$$\int \frac{\left(c \operatorname{ProductLog}\left[\frac{a}{x}\right]\right)^p}{x^3} dx$$

Unable to integrate:

$$\left\{\operatorname{ProductLog}\left[\frac{a}{x^{1/4}}\right]^5, x, 2, 0\right\}$$

$$\frac{5}{4} x \operatorname{ProductLog}\left[\frac{a}{x^{1/4}}\right]^4 + x \operatorname{ProductLog}\left[\frac{a}{x^{1/4}}\right]^5$$

$$\int \operatorname{ProductLog}\left[\frac{a}{x^{1/4}}\right]^5 dx$$

Unable to integrate:

$$\left\{\operatorname{ProductLog}\left[\frac{a}{x^{1/3}}\right]^4, x, 2, 0\right\}$$

$$\frac{4}{3} x \operatorname{ProductLog}\left[\frac{a}{x^{1/3}}\right]^3 + x \operatorname{ProductLog}\left[\frac{a}{x^{1/3}}\right]^4$$

$$\int \operatorname{ProductLog}\left[\frac{a}{x^{1/3}}\right]^4 dx$$

Unable to integrate:

$$\left\{\operatorname{ProductLog}\left[\frac{a}{\sqrt{x}}\right]^3, x, 2, 0\right\}$$

$$\frac{3}{2} x \operatorname{ProductLog}\left[\frac{a}{\sqrt{x}}\right]^2 + x \operatorname{ProductLog}\left[\frac{a}{\sqrt{x}}\right]^3$$

$$\int \operatorname{ProductLog}\left[\frac{a}{\sqrt{x}}\right]^3 dx$$

Unable to integrate:

$$\left\{\operatorname{ProductLog}\left[\frac{a}{x}\right]^2, x, 2, 0\right\}$$

$$2 x \operatorname{ProductLog}\left[\frac{a}{x}\right] + x \operatorname{ProductLog}\left[\frac{a}{x}\right]^2$$

$$\int \operatorname{ProductLog}\left[\frac{a}{x}\right]^2 dx$$

Unable to integrate:

$$\left\{\frac{1}{\operatorname{ProductLog}\left[a x^{1/3}\right]^2}, x, 2, 0\right\}$$

$$\frac{2 x}{3 \operatorname{ProductLog}\left[a x^{1/3}\right]^3} + \frac{x}{\operatorname{ProductLog}\left[a x^{1/3}\right]^2}$$

$$\int \frac{1}{\operatorname{ProductLog}\left[a x^{1/3}\right]^2} dx$$

Unable to integrate:

$$\left\{\frac{1}{\operatorname{ProductLog}\left[a x^{1/4}\right]^3}, x, 2, 0\right\}$$

$$\frac{3 x}{4 \operatorname{ProductLog}\left[a x^{1/4}\right]^4} + \frac{x}{\operatorname{ProductLog}\left[a x^{1/4}\right]^3}$$

$$\int \frac{1}{\operatorname{ProductLog}\left[a x^{1/4}\right]^3} dx$$

Unable to integrate:

$$\left\{\operatorname{ProductLog}\left[\frac{a}{x^{1/5}}\right]^4, x, 2, 0\right\}$$

$$20 a^5 \operatorname{ExpIntegralEi}\left[-5 \operatorname{ProductLog}\left[\frac{a}{x^{1/5}}\right]\right] + 5 x \operatorname{ProductLog}\left[\frac{a}{x^{1/5}}\right]^4$$

$$\int \text{ProductLog}\left[\frac{a}{x^{1/5}}\right]^4 dx$$

Unable to integrate:

$$\left\{\text{ProductLog}\left[\frac{a}{x^{1/4}}\right]^3, x, 2, 0\right\}$$

$$12 a^4 \text{ExpIntegralEi}\left[-4 \text{ProductLog}\left[\frac{a}{x^{1/4}}\right]\right] + 4 x \text{ProductLog}\left[\frac{a}{x^{1/4}}\right]^3$$

$$\int \text{ProductLog}\left[\frac{a}{x^{1/4}}\right]^3 dx$$

Unable to integrate:

$$\left\{\text{ProductLog}\left[\frac{a}{x^{1/3}}\right]^2, x, 2, 0\right\}$$

$$6 a^3 \text{ExpIntegralEi}\left[-3 \text{ProductLog}\left[\frac{a}{x^{1/3}}\right]\right] + 3 x \text{ProductLog}\left[\frac{a}{x^{1/3}}\right]^2$$

$$\int \text{ProductLog}\left[\frac{a}{x^{1/3}}\right]^2 dx$$

Unable to integrate:

$$\left\{\text{ProductLog}\left[\frac{a}{\sqrt{x}}\right], x, 2, 0\right\}$$

$$2 a^2 \text{ExpIntegralEi}\left[-2 \text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]\right] + 2 x \text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]$$

$$\int \text{ProductLog}\left[\frac{a}{\sqrt{x}}\right] dx$$

Unable to integrate:

$$\left\{\frac{1}{\text{ProductLog}\left[a x^{1/3}\right]^4}, x, 2, 0\right\}$$

$$\frac{12 \text{ExpIntegralEi}\left[3 \text{ProductLog}\left[a x^{1/3}\right]\right]}{a^3} - \frac{3 x}{\text{ProductLog}\left[a x^{1/3}\right]^4}$$

$$\int \frac{1}{\text{ProductLog}\left[a x^{1/3}\right]^4} dx$$

Unable to integrate:

$$\left\{\frac{1}{\text{ProductLog}\left[a x^{1/4}\right]^5}, x, 2, 0\right\}$$

$$\frac{20 \text{ExpIntegralEi}\left[4 \text{ProductLog}\left[a x^{1/4}\right]\right]}{a^4} - \frac{4 x}{\text{ProductLog}\left[a x^{1/4}\right]^5}$$

$$\int \frac{1}{\text{ProductLog}\left[a x^{1/4}\right]^5} dx$$

Unable to integrate:

$$\left\{ \text{ProductLog}\left[a x^n\right]^{\frac{-1+n}{n}}, x, 2, 0 \right\}$$

$$(1-n) x \text{ProductLog}\left[a x^n\right]^{-1/n} + x \text{ProductLog}\left[a x^n\right]^{-\frac{1-n}{n}}$$

$$\int \text{ProductLog}\left[a x^n\right]^{\frac{-1+n}{n}} dx$$

Unable to integrate:

$$\left\{ \text{ProductLog}\left[a x^{\frac{1}{1-p}}\right]^p, x, 2, 0 \right\}$$

$$-\frac{p x \text{ProductLog}\left[a x^{\frac{1}{1-p}}\right]^{-1+p}}{1-p} + x \text{ProductLog}\left[a x^{\frac{1}{1-p}}\right]^p$$

$$\int \text{ProductLog}\left[a x^{\frac{1}{1-p}}\right]^p dx$$

Unable to integrate:

$$\left\{ x^{-1-n} (c \text{ProductLog}[a x^n])^{9/2}, x, 5, 0 \right\}$$

$$\frac{135 a c^{9/2} \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{c \text{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{16 n} - \frac{135 c^3 x^{-n} (c \text{ProductLog}[a x^n])^{3/2}}{8 n} -$$

$$\frac{45 c^2 x^{-n} (c \text{ProductLog}[a x^n])^{5/2}}{4 n} - \frac{9 c x^{-n} (c \text{ProductLog}[a x^n])^{7/2}}{2 n} - \frac{x^{-n} (c \text{ProductLog}[a x^n])^{9/2}}{n}$$

$$\int x^{-1-n} (c \text{ProductLog}[a x^n])^{9/2} dx$$

Unable to integrate:

$$\left\{ x^{-1-n} (c \text{ProductLog}[a x^n])^{7/2}, x, 4, 0 \right\}$$

$$\frac{21 a c^{7/2} \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{c \text{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{8 n} - \frac{21 c^2 x^{-n} (c \text{ProductLog}[a x^n])^{3/2}}{4 n} -$$

$$\frac{7 c x^{-n} (c \text{ProductLog}[a x^n])^{5/2}}{2 n} - \frac{x^{-n} (c \text{ProductLog}[a x^n])^{7/2}}{n}$$

$$\int x^{-1-n} (c \text{ProductLog}[a x^n])^{7/2} dx$$

Unable to integrate:

$$\left\{ x^{-1-n} (c \text{ProductLog}[a x^n])^{5/2}, x, 3, 0 \right\}$$

$$\frac{5 a c^{5/2} \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{c \text{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{4 n} - \frac{5 c x^{-n} (c \text{ProductLog}[a x^n])^{3/2}}{2 n} - \frac{x^{-n} (c \text{ProductLog}[a x^n])^{5/2}}{n}$$

$$\int x^{-1-n} (c \text{ProductLog}[a x^n])^{5/2} dx$$

Unable to integrate:

$$\left\{ x^{-1-n} (c \text{ProductLog}[a x^n])^{3/2}, x, 2, 0 \right\}$$

$$\frac{3 a c^{3/2} \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{2 n} - \frac{x^{-n} (c \operatorname{ProductLog}[a x^n])^{3/2}}{n}$$

$$\int x^{-1-n} (c \operatorname{ProductLog}[a x^n])^{3/2} dx$$

Unable to integrate:

$$\left\{ x^{-1-n} \sqrt{c \operatorname{ProductLog}[a x^n]}, x, 2, 0 \right\}$$

$$-\frac{a \sqrt{c} \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{n} - \frac{2 x^{-n} \sqrt{c \operatorname{ProductLog}[a x^n]}}{n}$$

$$\int x^{-1-n} \sqrt{c \operatorname{ProductLog}[a x^n]} dx$$

Unable to integrate:

$$\left\{ \frac{x^{-1-n}}{\sqrt{c \operatorname{ProductLog}[a x^n]}}, x, 3, 0 \right\}$$

$$-\frac{2 a \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{3 \sqrt{c} n} - \frac{2 x^{-n}}{3 n \sqrt{c \operatorname{ProductLog}[a x^n]}} - \frac{2 x^{-n} \sqrt{c \operatorname{ProductLog}[a x^n]}}{3 c n}$$

$$\int \frac{x^{-1-n}}{\sqrt{c \operatorname{ProductLog}[a x^n]}} dx$$

Unable to integrate:

$$\left\{ \frac{x^{-1-n}}{(c \operatorname{ProductLog}[a x^n])^{3/2}}, x, 4, 0 \right\}$$

$$\frac{4 a \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{5 c^{3/2} n} - \frac{2 x^{-n}}{5 n (c \operatorname{ProductLog}[a x^n])^{3/2}} - \frac{2 x^{-n}}{5 c n \sqrt{c \operatorname{ProductLog}[a x^n]}} + \frac{4 x^{-n} \sqrt{c \operatorname{ProductLog}[a x^n]}}{5 c^2 n}$$

$$\int \frac{x^{-1-n}}{(c \operatorname{ProductLog}[a x^n])^{3/2}} dx$$

Unable to integrate:

$$\left\{ \frac{x^{-1-n}}{(c \operatorname{ProductLog}[a x^n])^{5/2}}, x, 5, 0 \right\}$$

$$-\frac{8 a \sqrt{\pi} \operatorname{Erf}\left[\frac{\sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{21 c^{5/2} n} - \frac{2 x^{-n}}{7 n (c \operatorname{ProductLog}[a x^n])^{5/2}} -$$

$$\frac{2 x^{-n}}{7 c n (c \operatorname{ProductLog}[a x^n])^{3/2}} + \frac{4 x^{-n}}{21 c^2 n \sqrt{c \operatorname{ProductLog}[a x^n]}} - \frac{8 x^{-n} \sqrt{c \operatorname{ProductLog}[a x^n]}}{21 c^3 n}$$

$$\int \frac{x^{-1-n}}{(c \operatorname{ProductLog}[a x^n])^{5/2}} dx$$

Unable to integrate:

$$\{x^{-1-2n} (c \operatorname{ProductLog}[a x^n])^{11/2}, x, 5, 0\}$$

$$\frac{165 a^2 c^{11/2} \sqrt{\frac{\pi}{2}} \operatorname{Erf}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{256 n} - \frac{165 c^3 x^{-2n} (c \operatorname{ProductLog}[a x^n])^{5/2}}{128 n} -$$

$$\frac{55 c^2 x^{-2n} (c \operatorname{ProductLog}[a x^n])^{7/2}}{32 n} - \frac{11 c x^{-2n} (c \operatorname{ProductLog}[a x^n])^{9/2}}{8 n} - \frac{x^{-2n} (c \operatorname{ProductLog}[a x^n])^{11/2}}{2 n}$$

$$\int x^{-1-2n} (c \operatorname{ProductLog}[a x^n])^{11/2} dx$$

Unable to integrate:

$$\{x^{-1-2n} (c \operatorname{ProductLog}[a x^n])^{9/2}, x, 4, 0\}$$

$$\frac{27 a^2 c^{9/2} \sqrt{\frac{\pi}{2}} \operatorname{Erf}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{64 n} - \frac{27 c^2 x^{-2n} (c \operatorname{ProductLog}[a x^n])^{5/2}}{32 n} -$$

$$\frac{9 c x^{-2n} (c \operatorname{ProductLog}[a x^n])^{7/2}}{8 n} - \frac{x^{-2n} (c \operatorname{ProductLog}[a x^n])^{9/2}}{2 n}$$

$$\int x^{-1-2n} (c \operatorname{ProductLog}[a x^n])^{9/2} dx$$

Unable to integrate:

$$\{x^{-1-2n} (c \operatorname{ProductLog}[a x^n])^{7/2}, x, 3, 0\}$$

$$\frac{7 a^2 c^{7/2} \sqrt{\frac{\pi}{2}} \operatorname{Erf}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{16 n} - \frac{7 c x^{-2n} (c \operatorname{ProductLog}[a x^n])^{5/2}}{8 n} - \frac{x^{-2n} (c \operatorname{ProductLog}[a x^n])^{7/2}}{2 n}$$

$$\int x^{-1-2n} (c \operatorname{ProductLog}[a x^n])^{7/2} dx$$

Unable to integrate:

$$\{x^{-1-2n} (c \operatorname{ProductLog}[a x^n])^{5/2}, x, 2, 0\}$$

$$\frac{5 a^2 c^{5/2} \sqrt{\frac{\pi}{2}} \operatorname{Erf}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{4 n} - \frac{x^{-2n} (c \operatorname{ProductLog}[a x^n])^{5/2}}{2 n}$$

$$\int x^{-1-2n} (c \operatorname{ProductLog}[a x^n])^{5/2} dx$$

Unable to integrate:

$$\{x^{-1-2n} (c \operatorname{ProductLog}[a x^n])^{3/2}, x, 2, 0\}$$

$$-\frac{3 a^2 c^{3/2} \sqrt{\frac{\pi}{2}} \operatorname{Erf}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{n} - \frac{2 x^{-2n} (c \operatorname{ProductLog}[a x^n])^{3/2}}{n}$$

$$\int x^{-1-2n} (c \operatorname{ProductLog}[a x^n])^{3/2} dx$$

Unable to integrate:

$$\left\{x^{-1-2n}\sqrt{c\operatorname{ProductLog}[a x^n]}, x, 3, 0\right\}$$

$$\frac{2a^2\sqrt{c}\sqrt{2\pi}\operatorname{Erf}\left[\frac{\sqrt{2}\sqrt{c\operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{3n} - \frac{2x^{-2n}\sqrt{c\operatorname{ProductLog}[a x^n]}}{3n} + \frac{2x^{-2n}(c\operatorname{ProductLog}[a x^n])^{3/2}}{3cn}$$

$$\int x^{-1-2n}\sqrt{c\operatorname{ProductLog}[a x^n]} dx$$

Unable to integrate:

$$\left\{\frac{x^{-1-2n}}{\sqrt{c\operatorname{ProductLog}[a x^n]}}, x, 4, 0\right\}$$

$$\frac{8a^2\sqrt{2\pi}\operatorname{Erf}\left[\frac{\sqrt{2}\sqrt{c\operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{15\sqrt{c}n} - \frac{2x^{-2n}}{5n\sqrt{c\operatorname{ProductLog}[a x^n]}} - \frac{2x^{-2n}\sqrt{c\operatorname{ProductLog}[a x^n]}}{15cn} + \frac{8x^{-2n}(c\operatorname{ProductLog}[a x^n])^{3/2}}{15c^2n}$$

$$\int \frac{x^{-1-2n}}{\sqrt{c\operatorname{ProductLog}[a x^n]}} dx$$

Unable to integrate:

$$\left\{\frac{x^{-1-2n}}{(c\operatorname{ProductLog}[a x^n])^{3/2}}, x, 5, 0\right\}$$

$$-\frac{32a^2\sqrt{2\pi}\operatorname{Erf}\left[\frac{\sqrt{2}\sqrt{c\operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{35c^{3/2}n} - \frac{2x^{-2n}}{7n(c\operatorname{ProductLog}[a x^n])^{3/2}} - \frac{6x^{-2n}}{35cn\sqrt{c\operatorname{ProductLog}[a x^n]}} + \frac{8x^{-2n}\sqrt{c\operatorname{ProductLog}[a x^n]}}{35c^2n} - \frac{32x^{-2n}(c\operatorname{ProductLog}[a x^n])^{3/2}}{35c^3n}$$

$$\int \frac{x^{-1-2n}}{(c\operatorname{ProductLog}[a x^n])^{3/2}} dx$$

Unable to integrate:

$$\left\{x^{-1+2n}(c\operatorname{ProductLog}[a x^n])^{3/2}, x, 5, 0\right\}$$

$$\frac{45c^{3/2}\sqrt{\frac{\pi}{2}}\operatorname{Erfi}\left[\frac{\sqrt{2}\sqrt{c\operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{256a^2n} - \frac{45c^3x^{2n}}{128n(c\operatorname{ProductLog}[a x^n])^{3/2}} +$$

$$\frac{15c^2x^{2n}}{32n\sqrt{c\operatorname{ProductLog}[a x^n]}} - \frac{3cx^{2n}\sqrt{c\operatorname{ProductLog}[a x^n]}}{8n} + \frac{x^{2n}(c\operatorname{ProductLog}[a x^n])^{3/2}}{2n}$$

$$\int x^{-1+2n}(c\operatorname{ProductLog}[a x^n])^{3/2} dx$$

Unable to integrate:

$$\left\{x^{-1+2n}\sqrt{c\operatorname{ProductLog}[a x^n]}, x, 4, 0\right\}$$

$$\begin{aligned}
& - \frac{3 \sqrt{c} \sqrt{\frac{\pi}{2}} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{64 a^2 n} + \frac{3 c^2 x^{2 n}}{32 n (c \operatorname{ProductLog}[a x^n])^{3/2}} - \frac{c x^{2 n}}{8 n \sqrt{c \operatorname{ProductLog}[a x^n]}} + \frac{x^{2 n} \sqrt{c \operatorname{ProductLog}[a x^n]}}{2 n} \\
& \int x^{-1+2 n} \sqrt{c \operatorname{ProductLog}[a x^n]} \, dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{x^{-1+2 n}}{\sqrt{c \operatorname{ProductLog}[a x^n]}}, x, 3, 0 \right\} \\
& - \frac{\sqrt{\frac{\pi}{2}} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{16 a^2 \sqrt{c} n} + \frac{c x^{2 n}}{8 n (c \operatorname{ProductLog}[a x^n])^{3/2}} + \frac{x^{2 n}}{2 n \sqrt{c \operatorname{ProductLog}[a x^n]}} \\
& \int \frac{x^{-1+2 n}}{\sqrt{c \operatorname{ProductLog}[a x^n]}} \, dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{x^{-1+2 n}}{(c \operatorname{ProductLog}[a x^n])^{3/2}}, x, 2, 0 \right\} \\
& \frac{3 \sqrt{\frac{\pi}{2}} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{4 a^2 c^{3/2} n} + \frac{x^{2 n}}{2 n (c \operatorname{ProductLog}[a x^n])^{3/2}} \\
& \int \frac{x^{-1+2 n}}{(c \operatorname{ProductLog}[a x^n])^{3/2}} \, dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{x^{-1+2 n}}{(c \operatorname{ProductLog}[a x^n])^{5/2}}, x, 2, 0 \right\} \\
& \frac{5 \sqrt{\frac{\pi}{2}} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{a^2 c^{5/2} n} - \frac{2 x^{2 n}}{n (c \operatorname{ProductLog}[a x^n])^{5/2}} \\
& \int \frac{x^{-1+2 n}}{(c \operatorname{ProductLog}[a x^n])^{5/2}} \, dx
\end{aligned}$$

Unable to integrate:

$$\begin{aligned}
& \left\{ \frac{x^{-1+2 n}}{(c \operatorname{ProductLog}[a x^n])^{7/2}}, x, 3, 0 \right\} \\
& \frac{14 \sqrt{2} \pi \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \operatorname{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{3 a^2 c^{7/2} n} - \frac{2 x^{2 n}}{3 n (c \operatorname{ProductLog}[a x^n])^{7/2}} - \frac{14 x^{2 n}}{3 c n (c \operatorname{ProductLog}[a x^n])^{5/2}} \\
& \int \frac{x^{-1+2 n}}{(c \operatorname{ProductLog}[a x^n])^{7/2}} \, dx
\end{aligned}$$

Mathematica 7 Test Results for Integration Problems Involving Special Functions

Unable to integrate:

$$\left\{ \frac{x^{-1+2n}}{(c \text{ProductLog}[a x^n])^{9/2}}, x, 4, 0 \right\}$$

$$\frac{24 \sqrt{2} \pi \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \text{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{5 a^2 c^{9/2} n} - \frac{2 x^{2n}}{5 n (c \text{ProductLog}[a x^n])^{9/2}} - \frac{6 x^{2n}}{5 c n (c \text{ProductLog}[a x^n])^{7/2}} - \frac{24 x^{2n}}{5 c^2 n (c \text{ProductLog}[a x^n])^{5/2}}$$

$$\int \frac{x^{-1+2n}}{(c \text{ProductLog}[a x^n])^{9/2}} dx$$

Unable to integrate:

$$\left\{ \frac{x^{-1+2n}}{(c \text{ProductLog}[a x^n])^{11/2}}, x, 5, 0 \right\}$$

$$\frac{352 \sqrt{2} \pi \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{c \text{ProductLog}[a x^n]}}{\sqrt{c}}\right]}{105 a^2 c^{11/2} n} - \frac{2 x^{2n}}{7 n (c \text{ProductLog}[a x^n])^{11/2}} - \frac{22 x^{2n}}{35 c n (c \text{ProductLog}[a x^n])^{9/2}} - \frac{88 x^{2n}}{105 c^2 n (c \text{ProductLog}[a x^n])^{7/2}} - \frac{352 x^{2n}}{105 c^3 n (c \text{ProductLog}[a x^n])^{5/2}}$$

$$\int \frac{x^{-1+2n}}{(c \text{ProductLog}[a x^n])^{11/2}} dx$$

Unable to integrate:

$$\{x^{-1-3n} \text{ProductLog}[a x^n]^4, x, 2, 0\}$$

$$- \frac{4 x^{-3n} \text{ProductLog}[a x^n]^3}{9 n} - \frac{x^{-3n} \text{ProductLog}[a x^n]^4}{3 n}$$

$$\int x^{-1-3n} \text{ProductLog}[a x^n]^4 dx$$

Unable to integrate:

$$\{x^{-1-2n} \text{ProductLog}[a x^n]^3, x, 2, 0\}$$

$$- \frac{3 x^{-2n} \text{ProductLog}[a x^n]^2}{4 n} - \frac{x^{-2n} \text{ProductLog}[a x^n]^3}{2 n}$$

$$\int x^{-1-2n} \text{ProductLog}[a x^n]^3 dx$$

Unable to integrate:

$$\{x^{-1-n} \text{ProductLog}[a x^n]^2, x, 2, 0\}$$

$$- \frac{2 x^{-n} \text{ProductLog}[a x^n]}{n} - \frac{x^{-n} \text{ProductLog}[a x^n]^2}{n}$$

$$\int x^{-1-n} \text{ProductLog}[a x^n]^2 dx$$

Unable to integrate:

$$\left\{ \frac{x^{-1+2n}}{\text{ProductLog}[a x^n]}, x, 2, 0 \right\}$$

$$\frac{x^{2n}}{4n \operatorname{ProductLog}[a x^n]^2} + \frac{x^{2n}}{2n \operatorname{ProductLog}[a x^n]}$$

$$\int \frac{x^{-1+2n}}{\operatorname{ProductLog}[a x^n]} dx$$

Unable to integrate:

$$\left\{ \frac{x^{-1+3n}}{\operatorname{ProductLog}[a x^n]^2}, x, 2, 0 \right\}$$

$$\frac{2x^{3n}}{9n \operatorname{ProductLog}[a x^n]^3} + \frac{x^{3n}}{3n \operatorname{ProductLog}[a x^n]^2}$$

$$\int \frac{x^{-1+3n}}{\operatorname{ProductLog}[a x^n]^2} dx$$

Unable to integrate:

$$\left\{ \frac{x^{-1+4n}}{\operatorname{ProductLog}[a x^n]^3}, x, 2, 0 \right\}$$

$$\frac{3x^{4n}}{16n \operatorname{ProductLog}[a x^n]^4} + \frac{x^{4n}}{4n \operatorname{ProductLog}[a x^n]^3}$$

$$\int \frac{x^{-1+4n}}{\operatorname{ProductLog}[a x^n]^3} dx$$

Unable to integrate:

$$\left\{ x^{-1+n(1-p)} (c \operatorname{ProductLog}[a x^n])^p, x, 2, 0 \right\}$$

$$-\frac{c^p x^{n(1-p)} (c \operatorname{ProductLog}[a x^n])^{-1+p}}{n(1-p)^2} + \frac{x^{n(1-p)} (c \operatorname{ProductLog}[a x^n])^p}{n(1-p)}$$

$$\int x^{-1+n(1-p)} (c \operatorname{ProductLog}[a x^n])^p dx$$

Unable to integrate:

$$\left\{ x^{-1+n(2-p)} (c \operatorname{ProductLog}[a x^n])^p, x, 3, 0 \right\}$$

$$\frac{c^2 p x^{n(2-p)} (c \operatorname{ProductLog}[a x^n])^{-2+p}}{n(2-p)^3} - \frac{c^p x^{n(2-p)} (c \operatorname{ProductLog}[a x^n])^{-1+p}}{n(2-p)^2} + \frac{x^{n(2-p)} (c \operatorname{ProductLog}[a x^n])^p}{n(2-p)}$$

$$\int x^{-1+n(2-p)} (c \operatorname{ProductLog}[a x^n])^p dx$$

Unable to integrate:

$$\left\{ x^{-1+n(3-p)} (c \operatorname{ProductLog}[a x^n])^p, x, 4, 0 \right\}$$

$$-\frac{2c^3 p x^{n(3-p)} (c \operatorname{ProductLog}[a x^n])^{-3+p}}{n(3-p)^4} + \frac{2c^2 p x^{n(3-p)} (c \operatorname{ProductLog}[a x^n])^{-2+p}}{n(3-p)^3} -$$

$$\frac{c^p x^{n(3-p)} (c \operatorname{ProductLog}[a x^n])^{-1+p}}{n(3-p)^2} + \frac{x^{n(3-p)} (c \operatorname{ProductLog}[a x^n])^p}{n(3-p)}$$

$$\int x^{-1+n(3-p)} (c \operatorname{ProductLog}[a x^n])^p dx$$

Unable to integrate:

$$\left\{ \frac{1}{x^3 (1 + \text{ProductLog}[a x^2])}, x, 3, 0 \right\}$$

$$-\frac{1}{2 x^2} - \frac{1}{2} a \text{ExpIntegralEi}[-\text{ProductLog}[a x^2]]$$

$$\int \frac{1}{x^3 (1 + \text{ProductLog}[a x^2])} dx$$

Unable to integrate:

$$\left\{ \frac{x^3}{1 + \text{ProductLog}\left[\frac{a}{x}\right]}, x, 6, 0 \right\}$$

$$\frac{x^4}{4} - \frac{32}{3} a^4 \text{ExpIntegralEi}\left[-4 \text{ProductLog}\left[\frac{a}{x}\right]\right] - \frac{1}{3} x^4 \text{ProductLog}\left[\frac{a}{x}\right] + \frac{2}{3} x^4 \text{ProductLog}\left[\frac{a}{x}\right]^2 - \frac{8}{3} x^4 \text{ProductLog}\left[\frac{a}{x}\right]^3$$

$$\int \frac{x^3}{1 + \text{ProductLog}\left[\frac{a}{x}\right]} dx$$

Unable to integrate:

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

$$\frac{x^3}{3} + \frac{9}{2} a^3 \text{ExpIntegralEi}\left[-3 \text{ProductLog}\left[\frac{a}{x}\right]\right] - \frac{1}{2} x^3 \text{ProductLog}\left[\frac{a}{x}\right] + \frac{3}{2} x^3 \text{ProductLog}\left[\frac{a}{x}\right]^2$$

$$\int \frac{x^2}{1 + \text{ProductLog}\left[\frac{a}{x}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{x}{1 + \text{ProductLog}\left[\frac{a}{x}\right]}, x, 4, 0 \right\}$$

$$\frac{x^2}{2} - 2 a^2 \text{ExpIntegralEi}\left[-2 \text{ProductLog}\left[\frac{a}{x}\right]\right] - x^2 \text{ProductLog}\left[\frac{a}{x}\right]$$

$$\int \frac{x}{1 + \text{ProductLog}\left[\frac{a}{x}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{1}{1 + \text{ProductLog}\left[\frac{a}{x}\right]}, x, 3, 0 \right\}$$

$$x + a \text{ExpIntegralEi}\left[-\text{ProductLog}\left[\frac{a}{x}\right]\right]$$

$$\int \frac{1}{1 + \text{ProductLog}\left[\frac{a}{x}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{1}{x^3 \left(1 + \text{ProductLog}\left[\frac{a}{x}\right] \right)}, x, 3, 0 \right\}$$

$$\frac{1}{4 x^2 \text{ProductLog}\left[\frac{a}{x}\right]^2} - \frac{1}{2 x^2 \text{ProductLog}\left[\frac{a}{x}\right]}$$

$$\int \frac{1}{x^3 \left(1 + \text{ProductLog}\left[\frac{a}{x}\right] \right)} dx$$

Unable to integrate:

$$\left\{ \frac{1}{x^4 \left(1 + \text{ProductLog}\left[\frac{a}{x}\right] \right)}, x, 4, 0 \right\}$$

$$-\frac{2}{27 x^3 \text{ProductLog}\left[\frac{a}{x}\right]^3} + \frac{2}{9 x^3 \text{ProductLog}\left[\frac{a}{x}\right]^2} - \frac{1}{3 x^3 \text{ProductLog}\left[\frac{a}{x}\right]}$$

$$\int \frac{1}{x^4 \left(1 + \text{ProductLog}\left[\frac{a}{x}\right] \right)} dx$$

Unable to integrate:

$$\left\{ \frac{x^3}{1 + \text{ProductLog}\left[\frac{a}{x^2}\right]}, x, 5, 0 \right\}$$

$$\frac{x^4}{4} - a^2 \text{ExpIntegralEi}\left[-2 \text{ProductLog}\left[\frac{a}{x^2}\right]\right] - \frac{1}{2} x^4 \text{ProductLog}\left[\frac{a}{x^2}\right]$$

$$\int \frac{x^3}{1 + \text{ProductLog}\left[\frac{a}{x^2}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{x}{1 + \text{ProductLog}\left[\frac{a}{x^2}\right]}, x, 4, 0 \right\}$$

$$\frac{x^2}{2} + \frac{1}{2} a \text{ExpIntegralEi}\left[-\text{ProductLog}\left[\frac{a}{x^2}\right]\right]$$

$$\int \frac{x}{1 + \text{ProductLog}\left[\frac{a}{x^2}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{x^{1/4}}\right]^5}{1 + \text{ProductLog}\left[\frac{a}{x^{1/4}}\right]}, x, 1, 0 \right\}$$

$$x \text{ProductLog}\left[\frac{a}{x^{1/4}}\right]^4$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{x^{1/4}}\right]^5}{1 + \text{ProductLog}\left[\frac{a}{x^{1/4}}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{x^{1/3}}\right]^4}{1 + \text{ProductLog}\left[\frac{a}{x^{1/3}}\right]}, x, 1, 0 \right\}$$

$$x \text{ProductLog}\left[\frac{a}{x^{1/3}}\right]^3$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{x^{1/3}}\right]^4}{1 + \text{ProductLog}\left[\frac{a}{x^{1/3}}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]^3}{1 + \text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]}, x, 1, 0 \right\}$$

$$x \text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]^2$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]^3}{1 + \text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{x}\right]^2}{1 + \text{ProductLog}\left[\frac{a}{x}\right]}, x, 1, 0 \right\}$$

$$x \text{ProductLog}\left[\frac{a}{x}\right]$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{x}\right]^2}{1 + \text{ProductLog}\left[\frac{a}{x}\right]} dx$$

Unable to integrate:

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

$$\frac{x}{\text{ProductLog}\left[a x^{1/3}\right]^3}$$

$$\int \frac{1}{\text{ProductLog}\left[a x^{1/3}\right]^2 \left(1 + \text{ProductLog}\left[a x^{1/3}\right]\right)} dx$$

Unable to integrate:

$$\left\{ \frac{1}{\text{ProductLog}\left[a x^{1/4}\right]^3 \left(1 + \text{ProductLog}\left[a x^{1/4}\right]\right)}, x, 1, 0 \right\}$$

$$\frac{x}{\text{ProductLog}\left[a x^{1/4}\right]^4}$$

$$\int \frac{1}{\text{ProductLog}\left[a x^{1/4}\right]^3 \left(1 + \text{ProductLog}\left[a x^{1/4}\right]\right)} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{x^{1/4}}\right]^4}{1 + \text{ProductLog}\left[\frac{a}{x^{1/4}}\right]}, x, 1, 0 \right\}$$

$$-4 a^4 \text{ExpIntegralEi}\left[-4 \text{ProductLog}\left[\frac{a}{x^{1/4}}\right]\right]$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{x^{1/4}}\right]^4}{1 + \text{ProductLog}\left[\frac{a}{x^{1/4}}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{x^{1/3}}\right]^3}{1 + \text{ProductLog}\left[\frac{a}{x^{1/3}}\right]}, x, 1, 0 \right\}$$

$$-3 a^3 \text{ExpIntegralEi}\left[-3 \text{ProductLog}\left[\frac{a}{x^{1/3}}\right]\right]$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{x^{1/3}}\right]^3}{1 + \text{ProductLog}\left[\frac{a}{x^{1/3}}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]^2}{1 + \text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]}, x, 1, 0 \right\}$$

$$-2 a^2 \text{ExpIntegralEi}\left[-2 \text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]\right]$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]^2}{1 + \text{ProductLog}\left[\frac{a}{\sqrt{x}}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[\frac{a}{x}\right]}{1 + \text{ProductLog}\left[\frac{a}{x}\right]}, x, 1, 0 \right\}$$

$$-a \text{ExpIntegralEi}\left[-\text{ProductLog}\left[\frac{a}{x}\right]\right]$$

$$\int \frac{\text{ProductLog}\left[\frac{a}{x}\right]}{1 + \text{ProductLog}\left[\frac{a}{x}\right]} dx$$

Unable to integrate:

$$\left\{ \frac{1}{\text{ProductLog}\left[a x^{1/3}\right]^3 \left(1 + \text{ProductLog}\left[a x^{1/3}\right]\right)}, x, 1, 0 \right\}$$

$$\frac{3 \text{ExpIntegralEi}\left[3 \text{ProductLog}\left[a x^{1/3}\right]\right]}{a^3}$$

$$\int \frac{1}{\text{ProductLog}\left[a x^{1/3}\right]^3 \left(1 + \text{ProductLog}\left[a x^{1/3}\right]\right)} dx$$

Unable to integrate:

$$\left\{ \frac{1}{\text{ProductLog}\left[a x^{1/4}\right]^4 \left(1 + \text{ProductLog}\left[a x^{1/4}\right]\right)}, x, 1, 0 \right\}$$

$$\frac{4 \text{ExpIntegralEi}\left[4 \text{ProductLog}\left[a x^{1/4}\right]\right]}{a^4}$$

$$\int \frac{1}{\text{ProductLog}\left[a x^{1/4}\right]^4 \left(1 + \text{ProductLog}\left[a x^{1/4}\right]\right)} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[a x^n\right]^{1-\frac{1}{n}}}{1 + \text{ProductLog}\left[a x^n\right]}, x, 1, 0 \right\}$$

$$x \text{ProductLog}\left[a x^n\right]^{-1/n}$$

$$\int \frac{\text{ProductLog}\left[a x^n\right]^{1-\frac{1}{n}}}{1 + \text{ProductLog}\left[a x^n\right]} dx$$

Unable to integrate:

$$\left\{ \frac{\text{ProductLog}\left[a x^{\frac{1}{1-p}}\right]^p}{1 + \text{ProductLog}\left[a x^{\frac{1}{1-p}}\right]}, x, 1, 0 \right\}$$

$$x \text{ProductLog}\left[a x^{\frac{1}{1-p}}\right]^{-1+p}$$

$$\int \frac{\text{ProductLog}\left[a x^{\frac{1}{1-p}}\right]^p}{1 + \text{ProductLog}\left[a x^{\frac{1}{1-p}}\right]} dx$$