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Integrationsmethoden - Lösungen

$$\int \frac{\ln(x)}{x^2}dx = -\frac{1+\ln(x)}{x} + c$$

$$\int x\ln^2(x)dx = \frac{x^2}{2}\ln(x)^2 - \frac{x^2}{2}\ln(x) + \frac{x^2}{4} + c$$

$$\int x^2e^x dx = e^x(x^2-2x+2) + c$$

$$\int \sin(x)\cos(x)dx = \frac{1}{2}\sin^2(x) + c$$

$$\int \cos(\ln(x))dx = \frac{x}{2}(\cos(\ln(x)) + \sin(\ln(x))) + c$$

$$\int \sinh^2(x)dx = \frac{1}{2}\cosh(x)\sinh(x) - \frac{x}{2} + c$$

$$\int x\sqrt{1-x^2}dx = -\frac{1}{3}\sqrt{(1-x^2)^3} + c$$

$$\int \sin^4(x)\cos(x)dx = \frac{1}{5}\sin(x)^5 + c$$

$$\int \frac{\cos(x)}{\sqrt{\sin(x)}}dx = 2\sqrt{\sin(x)} + c$$

$$\int xe^{-x^2}dx = -\frac{e^{-x^2}}{2} + c$$

$$\int \cos(x)e^{\sin(x)}dx = e^{\sin(x)} + c$$

$$\int \frac{\ln(x)}{x}dx = \frac{\ln(x)^2}{2} + c$$

$$\int \frac{e^x}{5+2e^x}dx = \frac{\ln(2e^x+5)}{2} + c$$

$$\int \frac{x+5}{x^2+10x-4}dx = \frac{\ln(x^2+10x-4)}{2} + c$$

$$\int \frac{\sin(x)\cos(x)}{1+\sin^2(x)}dx = \frac{\ln(\sin^2(x)+1)}{2} + c$$

$$\int \sqrt{2x+3}dx = \frac{\sqrt{(2x+3)^3}}{3} + c$$

$$\int \cos^2(x)dx = \frac{x}{2} + \frac{\sin(2x)}{4} + c = \frac{x}{2} + \frac{1}{2}\sin(x)\cos(x) + c$$

$$\int \sin(x)\cos(x)dx = \frac{1}{2}\sin^2(x) + c$$

$$\int \frac{1}{e^x - e^{-x}}dx = \arctan(e^x) + c$$

$$\int \sqrt{2-x^2}dx = \arcsin\left(\frac{x}{\sqrt{2}}\right) + \frac{x}{2}\sqrt{2-x^2} + c$$

$$\int \sqrt{e^x - 1}\, dx = 2\sqrt{e^x - 1} - 2\arctan(\sqrt{e^x - 1}) + c$$

$$\int_0^1 (e^x - 1)^4 e^x dx = \left[\frac{1}{5}(e^x - 1)^5\right]_0^1 = \frac{1}{5}(e - 1)^5$$

$$\int_1^{e^3} \frac{1}{x\sqrt{1 + \ln(x)}} dx = \left[2\sqrt{\ln(x) + 1}\right]_1^{e^3} = 2$$

$$\int_0^1 4x^3 \sqrt{x^4 + 1}\, dx = \left[\frac{2}{3}\sqrt{(x^4 + 1)^3}\right]_0^1 = \frac{4\sqrt{2} - 2}{3}$$