Grundintegrale

$$\int x^\alpha \, dx = \frac{1}{\alpha+1}\, x^{\alpha+1} \quad \text{falls } \alpha \in \mathbb{R} \setminus \{-1\} \text{ und } x > 0 \text{ oder } \alpha \in \mathbb{Z} \setminus \{-1\} \text{ und } x \neq 0 \text{ oder } \alpha \in \mathbb{N}$$

$$\int \frac{1}{x} \, dx = \ln(|x|) \quad (x \neq 0)$$

$$\int \frac{1}{1+x^2} \, dx = \arctan(x)$$

$$\int \frac{1}{1-x^2} \, dx = \frac{1}{2}\ln\left(\left|\frac{x+1}{x-1}\right|\right) = \begin{cases} \operatorname{artanh}(x) & \text{in } (-1,1) \\ \operatorname{arcoth}(x) & \text{in } (-\infty,-1) \text{ und in } (1,\infty) \end{cases}$$

$$\int \frac{dx}{\sqrt{1-x^2}} = \arcsin(x) \quad \text{in } (-1,1)$$

$$\int \frac{dx}{\sqrt{1+x^2}} = \ln(x+\sqrt{x^2+1}) = \operatorname{arsinh}(x)$$

$$\int \frac{dx}{\sqrt{x^2-1}} = \ln(|x+\sqrt{x^2-1}|) = \begin{cases} \operatorname{arcosh}(x) & \text{in } (1,\infty) \\ -\operatorname{arcosh}(x) & \text{in } (-\infty,-1) \end{cases}$$

$$\int e^x \, dx = e^x \qquad \int a^x \, dx = \frac{1}{\ln(a)} a^x \quad (a > 0 \text{ und } a \neq 1)$$

$$\int \sin(x) \, dx = -\cos(x) \qquad \int \cos(x) \, dx = \sin(x)$$

$$\int \tan(x) \, dx = -\ln(|\cos(x)|) \quad \text{in jedem Intervall } ((k-1/2)\pi, (k+1/2)\pi) \text{ mit } k \in \mathbb{Z}$$

$$\int \cot(x) \, dx = \ln(|\sin(x)|) \quad \text{in jedem Intervall } (k\pi, (k+1)\pi) \text{ mit } k \in \mathbb{Z}$$

$$\int \sinh(x) \, dx = \cosh(x) \qquad \int \cosh(x) \, dx = \sinh(x)$$

$$\int \tanh(x) \, dx = \ln(\cosh(x)) \qquad \int \coth(x) \, dx = \ln(|\sinh(x)|) \quad (x \neq 0)$$

$$\int \frac{dx}{\cos^2(x)} = \tan(x) \quad \text{in jedem Intervall } ((k-1/2)\pi, (k+1/2)\pi) \text{ mit } k \in \mathbb{Z}$$

$$\int \frac{dx}{\sin^2(x)} = -\cot(x) \quad \text{in jedem Intervall } (k\pi, (k+1)\pi) \text{ mit } k \in \mathbb{Z}$$