Неопределенный интеграл

Правила интегрирования

$$\int f'(x)\,dx = f(x) + C, \qquad \int C \cdot f(x)\,dx = C \cdot \int f(x)\,dx,$$

$$\int \left(f(x) \pm g(x)\right)\,dx = \int f(x)\,dx \pm \int g(x)\,dx,$$

$$\text{Если } \int f(x)\,dx = F(x) + C, \text{ то } \int f(ax+b)\,dx = \frac{1}{a}F(ax+b) + C.$$

Таблица интегралов

$$\int x^n\,dx = \frac{x^{n+1}}{n+1} + C.$$

$$\int \frac{dx}{x} = \ln|x| + C,\ x \neq 0.$$

$$\int a^x\,dx = \frac{a^x}{\ln a} + C,\ a > 0,\ a \neq 0.$$

$$\int e^x\,dx = e^x + C.$$

$$\int \cos x\,dx = \sin x + C.$$

$$\int \sin x\,dx = -\cos x + C.$$

$$\int \operatorname{tg} x\,dx = -\ln|\cos x| + C.$$

$$\int \operatorname{ctg} x\,dx = \ln|\sin x| + C.$$

$$\int \frac{1}{\cos^2 x}\,dx = \operatorname{tg} x + C.$$

$$\int \frac{1}{\sin^2 x}\,dx = -\operatorname{ctg} x + C.$$

$$\int \frac{1}{a^2 + x^2}\,dx = \frac{1}{a}\operatorname{arctg}\frac{x}{a} + C\ \left(-\frac{1}{a}\operatorname{arcctg}\frac{x}{a} + C\right).$$

$$\int \frac{1}{x^2 - a^2}\,dx = \frac{1}{2a}\ln\left|\frac{a-x}{a+x}\right| + C.$$

$$\int \frac{1}{\sqrt{a^2 - x^2}}\,dx = \arcsin\frac{x}{a} + C\ \left(-\arccos\frac{x}{a} + C\right).$$

$$\int \frac{1}{\sqrt{x^2 \pm a^2}}\,dx = \ln|x + \sqrt{x^2 \pm a^2}| + C.$$

$$\int \operatorname{sh} x\,dx = \operatorname{ch} x + C.$$

$$\int \operatorname{ch} x\,dx = \operatorname{sh} x + C.$$

$$\int \frac{1}{\operatorname{ch}^2 x}\,dx = \operatorname{th} x + C.$$

$$\int \frac{1}{\operatorname{sh}^2 x}\,dx = -\operatorname{cth} x + C.$$