

Wzory

$$\int x^\alpha dx = \frac{x^{\alpha+1}}{\alpha+1} + C \quad \text{dla } \alpha \neq -1,$$

$$\int \frac{1}{x} dx = \ln|x| + C,$$

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

$$\int a^x dx = \frac{a^x}{\ln a} + C,$$

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

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

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

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

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

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

$$\int (f(x) + g(x)) dx = \int f(x) dx + \int g(x) dx,$$

$$\int \alpha f(x) dx = \alpha \int f(x) dx.$$

$$\int \frac{f'(x)}{f(x)} dx = \ln|f(x)| + C$$

Zad. 1. Rozwiąż całki

$$\int (2x + 5)^2 dx \quad \int 17e^x dx \quad \int \frac{x^2 - \sqrt{x}}{\sqrt[3]{x}} dx \quad \int \frac{1}{x \ln x} dx \quad \int \frac{x + 2}{x - 2} dx \quad \int \frac{2^x - 3^x}{6^x}$$
$$\int \frac{e^x}{e^x - 5} dx \quad \int \frac{x^3 - 1}{x - 1} dx \quad \int x^2 + x^{\frac{1}{2}} - x^{-1} dx \quad \int \frac{x^2 - 1}{x} dx \quad \int \sin x - \cos x dx$$
$$\int \frac{2}{x} dx \quad \int \frac{3}{x^2} dx \quad \int \frac{\sqrt{1 - x^2}}{x^2 - 1} dx \quad \int \frac{x}{x^2 + 11} dx \quad \int \frac{2 + x}{x^2 + 1} dx$$

Zad. 2. Rozwiąż całki (przez podstawianie)

$$\int (5 - 3x)^{10} dx, \int x(x + 3)^5 dx, \int e^{3x} dx, \int \cos(3x + 1) dx, \int \frac{1}{5x - 1} dx, \int \frac{dx}{\sqrt{1 - 4x^2}}$$
$$\int x^2 \sqrt{5x^3 + 1} dx, \int \frac{\ln x}{x} dx, \int \frac{dx}{2 + \sqrt{x}}, \int \frac{x^3}{x + 1} dx, \int \frac{e^x}{e^{2x} + 1} dx, \int \frac{5 \sin x}{3 - 2 \cos x} dx, \int \frac{1}{1 + 4x^2} dx$$
$$\int (\sin x)^3 dx, \int \frac{dx}{\sqrt{4x - x^2}}, \int \frac{x}{\sqrt{3 - 5x^2}} dx, \int \frac{e^{\frac{1}{x}}}{x^2} dx, \int \frac{(\ln x)^2}{x} dx, \int \frac{dx}{e^x + e^{-x}}, \int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$$

Zadanie 3. Rozwiąż całki metodą „przez części”

$$\int x e^x dx, \int x^2 e^{3x} dx, \int \ln x dx, \int x \ln x dx, \int x \cdot \sin(3x) dx, \int x^2 \sin x dx, \int \frac{x}{\cos^2 x} dx$$
$$\int x^2 \sin 5x dx, \int \cos^2 x dx, \int x e^{-x} dx, \int e^{2x} \sin x dx, \int \sqrt{x} \ln x dx,$$