

Podstawowe właściwości całki:

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

$$\int c f dx = c \int f dx$$

NIE ZAKOŃCZENI

$$\int f g dx \neq \int f dx \cdot \int g dx$$

Skoro mamy

$$(FG)' = F'G + G'F, \text{ to mamy:}$$

$$FG = \int (FG)' dx = \int F'G dx + \int G'F dx$$

---

Policie następujące całki:

$$\int (x^2 + 2x + 1) dx : \int \sin 2x dx$$

$$\int 3x^5 dx : \int x e^{x^2} dx$$

$$\int \sqrt{x} dx : \int \frac{e}{x-4} dx$$

$$\int \cos 5x dx : \int \frac{3x^2}{x-4} dx$$

$$\int \frac{3x^4 + 2}{x} dx : \int (x+1)^8 dx$$

$$\int \operatorname{tg}^2(x) dx :$$

## Podstawienia

$$dt = \cos x dx \rightarrow t = \sin x$$

$$dt = \sin x dx \rightarrow t = -\cos x$$

$$dt = \frac{dx}{\cos^2 x} \rightarrow t = \operatorname{tg} x$$

$$dt = \frac{dx}{1+x^2} \rightarrow t = \operatorname{arctg} x$$

$$dt = \frac{dx}{\sqrt{1-x^2}} \rightarrow t = \arcsin x$$


---

ćwiczenia do policzenia

$$\int \cos(2x) dx$$

$$\int x e^{-x^2} dx$$

$$\int \frac{x}{1+x^2} dx$$

$$\int x \sin(x^2) dx$$

$$\int \frac{\ln(x) dx}{x}$$

$$\int (x^2 + x + e^x) dx$$

$$\int \ln(1+x) dx$$

$$\int \frac{dx}{1-x}$$

$$\int \frac{1+x}{2+x} dx$$

$$\int \sin(x) \cos(x) dx$$

$$\int \frac{dx}{e^x}$$

$$\int \frac{dx}{z\sqrt{x}}$$

$$\int e^{x^2 + 2x} x dx$$

$$\int \frac{x dx}{\cos^2 x}$$

$$\int \frac{x^2 dx}{1+x^2}$$

$$\int \cos^3 x dx$$

$$\int \sin^3 x dx$$

$$\int x^2 e^{x^3} dx$$

$$\int \operatorname{tg} x$$

$$\int e^{\ln x^2} dx$$