Matematika II – pomocný 1

Neurčitý integrál

Neurčitý integrál je opakom derivácie, označujeme ho

$$\int f(x)\,dx = F(x) + c$$

— integračná konštanta

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

Vzťahy:

$$\int [f(x) \pm g(x)]\,dx = \int f(x)\,dx \pm \int g(x)\,dx$$

$$\int c \cdot f(x)\,dx = c \int f(x)\,dx$$

Základné vzorce:

- $\int x^{\alpha}\,\mathrm{d}x = \frac{x^{\alpha+1}}{\alpha+1} + c$
- $\int \frac{1}{x}\,\mathrm{d}x = \ln|x| + c$
- $\int \mathrm{e}^{x}\,\mathrm{d}x = \mathrm{e}^{x} + c$
- $\int \mathrm{a}^{x}\,\mathrm{d}x = \frac{\mathrm{a}^{x}}{\ln a} + c$
- $\int \sin x\,\mathrm{d}x = -\cos x + c$
- $\int \cos x\,\mathrm{d}x = \sin x + c$
- $\int \frac{1}{\cos^2 x}\,\mathrm{d}x = \operatorname{tg} x + c$
- $\int \frac{1}{\sin^2 x}\,\mathrm{d}x = -\operatorname{cotg} x + c$
- $\int \frac{f'(x)}{f(x)}\,\mathrm{d}x = \ln|f(x)| + c$
- $\int \frac{1}{1+x^2}\,\mathrm{d}x = \operatorname{arctg} x + c$
- $\int \frac{1}{a^2+x^2}\,\mathrm{d}x = \frac{1}{a}\operatorname{arctg}\frac{x}{a} + c$
- $\int \frac{1}{1-x^2}\,\mathrm{d}x = \frac{1}{2}\ln\left|\frac{1+x}{1-x}\right| + c$
- $\int \frac{1}{\sqrt{1-x^2}}\,\mathrm{d}x = \arcsin x + c$
- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{d}x = \arcsin\frac{x}{a} + c$
- $\int \frac{1}{\sqrt{x^2+k}}\,\mathrm{d}x = \ln\left|x + \sqrt{x^2+k}\right| + c$

$$\int 1\,dx = x + c$$