

Základné vzorce

$$\begin{array}{llll}
 \sqrt[n]{x} = x^{\frac{1}{n}} & \ln x = \log_e x & \log_b x = \frac{\log_a x}{\log_a b} & \log_b x = \frac{\log_a x}{\log_a b} \\
 \sin^2 x + \cos^2 x = 1 & \operatorname{tg} x = \frac{\sin x}{\cos x} & \operatorname{cotg} x = \frac{\cos x}{\sin x} & \sinh x = \frac{e^x - e^{-x}}{2} \\
 \cosh x = \frac{e^x + e^{-x}}{2} & \operatorname{tgh} x = \frac{\sinh x}{\cosh x} & \operatorname{cotgh} x = \frac{\cosh x}{\sinh x} & \cosh^2 x - \sinh^2 x = 1 \\
 x^n - a^n = (x - a)(x^{n-1} + x^{n-2}a + \dots + xa^{n-2} + a^{n-1}) & & & \\
 x^n + a^n = (x + a)(x^{n-1} - x^{n-2}a + x^{n-3}a^2 - \dots - xa^{n-2} + a^{n-1}), n \text{ nepárne} & & & \\
 \sin(x \pm y) = \sin x \cos y \pm \cos x \sin y & & \cos(x \pm y) = \cos x \cos y \mp \sin x \sin y & \\
 \sinh(x \pm y) = \sinh x \cosh y \pm \cosh x \sinh y & & \cosh(x \pm y) = \cosh x \cosh y \pm \sinh x \sinh y &
 \end{array}$$

integrovanie:

$$\begin{array}{l}
 \int x^a dx = \frac{x^{a+1}}{a+1} + C, a \neq -1 \\
 \int \frac{1}{x} dx = \ln|x| + C \\
 \int e^x dx = e^x + C \\
 \int a^x dx = \frac{a^x}{\ln a} + C, a > 0, a \neq 1 \\
 \int \sin x dx = -\cos x + C \\
 \int \cos x dx = \sin x + C \\
 \int \operatorname{tg} x dx = -\ln|\cos x| + C \\
 \int \operatorname{cotg} x dx = \ln|\sin x| + C \\
 \int \frac{1}{1+x^2} dx = \operatorname{arctg} x + C = -\operatorname{arccotg} x + C \\
 \\
 \int \frac{1}{\sqrt{1-x^2}} = \operatorname{arcsin} x + C = -\operatorname{arccos} x + C
 \end{array}$$

$$\begin{array}{l}
 \int \frac{1}{\sqrt{x^2+a}} = \ln|x + \sqrt{x^2+a}| + C \\
 \int \frac{f'(x)}{f(x)} dx = \ln|f(x)| + C \\
 \int \sinh x = \cosh x + C \\
 \int \cosh x = \sinh x + C \\
 \int \operatorname{tgh} x = \ln \cosh x + C \\
 \int \operatorname{cotgh} x = \ln \sinh x + C
 \end{array}$$

Linearita

$$\begin{array}{l}
 \int (f_1(x) + f_2(x)) dx = \int f_1(x) dx + \int f_2(x) dx \\
 \int cf(x) dx = c \int f(x) dx
 \end{array}$$

Substitučná metóda

$$\int f(\varphi(x))\varphi'(x) dx = F(\varphi(x)), F(x) = \int f(x) dx$$

Metóda per partes

$$\int f(x)g'(x) dx = fg - \int f'(x)g(x) dx$$

derivovanie:

$$\begin{array}{l}
 (x^a)' = ax^{a-1} \\
 (\ln(x))' = \frac{1}{x} \\
 (e^x)' = e^x \\
 (a^x)' = a^x \ln a \\
 (\cos x)' = -\sin x \\
 (\sin x)' = \cos x \\
 (\operatorname{tg} x)' = \frac{1}{\cos^2 x} \\
 (\operatorname{cotg} x)' = -\frac{1}{\sin^2 x} \\
 (\operatorname{arctg} x)' = \frac{1}{1+x^2} \\
 (\operatorname{arccotg} x)' = -\frac{1}{1+x^2} \\
 (\operatorname{arcsin} x)' = \frac{1}{\sqrt{1-x^2}} \\
 (\operatorname{arccos} x)' = -\frac{1}{\sqrt{1-x^2}}
 \end{array}$$

$$\begin{array}{l}
 (\cosh x)' = \sinh x \\
 (\sinh x)' = \cosh x \\
 (\operatorname{tgh} x)' = \frac{1}{\cosh^2 x} \\
 (\operatorname{cotgh} x)' = \frac{1}{\sinh^2 x}
 \end{array}$$

$$\begin{array}{l}
 (f_1(x) + f_2(x))' = f_1'(x) + f_2'(x) \\
 (cf(x))' = cf'(x)
 \end{array}$$

$$(f(g(x)))' = f'(g(x))g'(x)$$

$$(f(x)g(x))' = f'(x)g(x) + f(x)g'(x)$$

$$\left(\frac{f(x)}{g(x)}\right)' = \frac{f'(x)g(x) - f(x)g'(x)}{g^2(x)}$$

Ďalšie vzorce:

Predpoklad: $a \neq 0$

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

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

$$\int \sqrt{a^2 - x^2} dx = \frac{a^2}{2} \operatorname{arcsin} \frac{x}{a} - \frac{1}{2}x\sqrt{a^2 - x^2} + C = -\frac{a^2}{2} \operatorname{arccos} \frac{x}{a} - \frac{1}{2}x\sqrt{a^2 - x^2} + C$$

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

$$\int \frac{1}{x^2 + a^2} = \frac{1}{a} \operatorname{arctg} \frac{x}{a} + C = -\frac{1}{a} \operatorname{arccotg} \frac{x}{a} + C$$