

$f(x)$	$f'(x)$
x^n	nx^{n-1}
\sqrt{x}	$\frac{1}{2\sqrt{x}}$
$\frac{1}{x}$	$-\frac{1}{x^2}$
e^x	e^x
a^x	$a^x \ln a$
$\ln x$	$\frac{1}{x}$
$\log_a x$	$\frac{1}{x \ln a}$
$\sin x$	$\cos x$
$\cos x$	$-\sin x$
$\operatorname{tg} x$	$\frac{1}{\cos^2 x}$
$\operatorname{ctg} x$	$-\frac{1}{\sin^2 x}$
$\operatorname{sh} x$	$\operatorname{ch} x$
$\operatorname{ch} x$	$\operatorname{sh} x$
$\operatorname{th} x$	$\frac{1}{\operatorname{ch}^2 x}$
$\operatorname{cth} x$	$-\frac{1}{\operatorname{sh}^2 x}$
$\arcsin x$	$\frac{1}{\sqrt{1-x^2}}$
$\arccos x$	$-\frac{1}{\sqrt{1-x^2}}$
$\operatorname{arctg} x$	$\frac{1}{1+x^2}$
$\operatorname{arcctg} x$	$-\frac{1}{1+x^2}$
$\operatorname{arsh} x$	$\frac{1}{\sqrt{1+x^2}}$
$\operatorname{arch} x$	$\frac{1}{\sqrt{x^2-1}}$
$\operatorname{arth} x$	$\frac{1}{1-x^2} \quad x < 1$
$\operatorname{arcth} x$	$\frac{1}{1-x^2} \quad x > 1$

Érintő egyenlete: $y = f'(x_0)(x - x_0) + f(x_0)$.

Függvénygrafikon ívhossza: $\int_a^b \sqrt{1 + (f'(x))^2} dx$.

Forgástest térfogata: $\pi \int_a^b f^2(x) dx$,

palástfelszíne: $2\pi \int_a^b f(x) \sqrt{1 + (f'(x))^2} dx$.

Trigonometrikus azonosságok

$$\sin^2 x + \cos^2 x = 1$$

$$\sin(x \pm y) = \sin x \cos y \pm \cos x \sin y$$

$$\cos(x \pm y) = \cos x \cos y \mp \sin x \sin y$$

Hiperbolikus függvények

$$\operatorname{sh} x = \frac{e^x - e^{-x}}{2}$$

$$\operatorname{ch} x = \frac{e^x + e^{-x}}{2}$$

$$\operatorname{th} x = \frac{\operatorname{sh} x}{\operatorname{ch} x}$$

$$\operatorname{ch}^2 x - \operatorname{sh}^2 x = 1$$

Deriválási szabályok

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

$$(cf)'(x) = cf'(x), \quad c \in \mathbb{R}$$

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

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

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

Integrálási szabályok

$$\int f(x) \pm g(x) dx = \int f(x) dx \pm \int g(x) dx$$

$$\int cf(x) dx = c \int f(x) dx, \quad c \in \mathbb{R}$$

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

$$\int f(ax + b) dx = \frac{1}{a}F(ax + b) + C, \quad a, b \in \mathbb{R}, F'(x) = f(x)$$

Maclaurin-sorok:

$$\frac{1}{1-x} = \sum_{n=0}^{\infty} x^n = 1 + x + x^2 + \dots, \text{ ha } |x| < 1$$

$$e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!} = 1 + x + \frac{x^2}{2} + \dots (x \in \mathbb{R})$$

$$\sin x = \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n+1}}{(2n+1)!} = x - \frac{x^3}{6} + \frac{x^5}{120} - \dots (x \in \mathbb{R})$$

$$\cos x = \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n}}{(2n)!} = 1 - \frac{x^2}{2} + \frac{x^4}{24} - \dots (x \in \mathbb{R})$$