Differenciálási szabályok, összefüggések

A differenciálható függvények deriváltfüggvényeire vonatkozó analóg összefüggések:

- $(c \cdot f)' = c \cdot f'$
- $(f \pm g)' = f' \pm g'$
- $(f \cdot g)' = f' \cdot g + f \cdot g'$
- $\left(\frac{1}{g}\right)' = -\frac{g'}{g^2} \qquad \big(0 \notin g(D_g)\big)$
- $\left(\frac{f}{g}\right)' = \frac{f' \cdot g - f \cdot g'}{g^2} \qquad \big(0 \notin g(D_g)\big)$
- $(f \circ g)' = (f' \circ g) \cdot g' \qquad \Big[\big(f(g(x))\big)' = f'\big(g(x)\big) \cdot g'(x)\Big]$

Néhány elemi függvény deriváltja:

$f(x) = c, (c \in \mathbb{R})$	$f'(x) = 0$
$f(x) = x,$	$f'(x) = 1$
$f(x) = x^\alpha, (\alpha \in \mathbb{R})$	$f'(x) = \alpha \cdot x^{\alpha-1}$
$f(x) = \sin(x),$	$f'(x) = \cos(x)$
$f(x) = \cos(x),$	$f'(x) = -\sin(x)$
$f(x) = \mathrm{tg}(x),$	$f'(x) = \frac{1}{\cos^2(x)}$
$f(x) = \mathrm{ctg}(x),$	$f'(x) = -\frac{1}{\sin^2(x)}$
$f(x) = e^x,$	$f'(x) = e^x$
$f(x) = a^x, (a \in \mathbb{R}^+)$	$f'(x) = a^x \cdot \ln(a)$
$f(x) = \ln(x),$	$f'(x) = \frac{1}{x}$
$f(x) = \log_a(x),$	$f'(x) = \frac{1}{x \cdot \ln(a)}$
$f(x) = \arcsin(x),$	$f'(x) = \frac{1}{\sqrt{1-x^2}}$
$f(x) = \arccos(x),$	$f'(x) = -\frac{1}{\sqrt{1-x^2}}$
$f(x) = \mathrm{arctg(x)},$	$f'(x) = \frac{1}{1+x^2}$
$f(x) = \mathrm{arcctg(x)},$	$f'(x) = -\frac{1}{1+x^2}$
$f(x) = \mathrm{sh(x)},$	$f'(x) = \mathrm{ch(x)}$
$f(x) = \mathrm{ch(x)},$	$f'(x) = \mathrm{sh(x)}$
$f(x) = \mathrm{th}(x),$	$f'(x) = \frac{1}{\mathrm{ch(x)}^2}$
$f(x) = \mathrm{cth}(x),$	$f'(x) = -\frac{1}{\mathrm{sh(x)}^2}$
$f(x) = \mathrm{ash(x)},$	$f'(x) = \frac{1}{\sqrt{x^2+1}}$
$f(x) = \mathrm{ach(x)},$	$f'(x) = \frac{1}{\sqrt{x^2-1}}$, ahol $x > 1$
$f(x) = \mathrm{ath(x)},$	$f'(x) = \frac{1}{1-x^2}$
$f(x) = \mathrm{acth(x)},$	$f'(x) = -\frac{1}{1-x^2}$