Universidade do Minho
Departamento de Matemática

Cálculo
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## Algumas regras de derivação

(estamos a omitir os domínios de definição das funções)

$C' = 0, \quad C$ constante

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

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

$(e^x)' = e^x$

$(a^x)' = a^x \ln a$

$\operatorname{sen}' x = \cos x$

$\operatorname{tg}' x = \sec^2 x$

$\sec' x = \sec x \operatorname{tg} x$

$\operatorname{sh}' x = \operatorname{ch} x$

$\operatorname{th}' x = \operatorname{sech}^2 x$

$\operatorname{sech}' x = -\operatorname{sech} x \operatorname{th} x$

$$\operatorname{arcsen}' x = \frac{1}{\sqrt{1-x^2}}$$

$$\operatorname{arctg}' x = \frac{1}{1+x^2}$$

$$\operatorname{arcsec}' x = \frac{1}{x\sqrt{x^2-1}}$$

$$\operatorname{argsh}' x = \frac{1}{\sqrt{1+x^2}}$$

$$\operatorname{argth}' x = \frac{1}{1-x^2}$$

$$\operatorname{argsech}' x = \frac{-1}{x\sqrt{1-x^2}}$$

$(x^\alpha)' = \alpha\, x^{\alpha-1}, \quad (\alpha \in \mathbb{R})$

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

$$\left(f^{-1}\right)'(x) = \frac{1}{f'(f^{-1}(x))}$$

$$\ln' x = \frac{1}{x}$$

$$\log_a' x = \frac{1}{x \ln a}$$

$\cos' x = -\operatorname{sen} x$

$\operatorname{cotg}' x = -\operatorname{cosec}^2 x$

$\operatorname{cosec}' x = -\operatorname{cosec} x \operatorname{cotg} x$

$\operatorname{ch}' x = \operatorname{sh} x$

$\operatorname{coth}' x = -\operatorname{cosech}^2 x$

$\operatorname{cosech}' x = -\operatorname{cosech} x \operatorname{coth} x$

$$\operatorname{arccos}' x = \frac{-1}{\sqrt{1-x^2}}$$

$$\operatorname{arccotg}' x = \frac{-1}{1+x^2}$$

$$\operatorname{arccosec}' x = \frac{-1}{x\sqrt{x^2-1}}$$

$$\operatorname{argch}' x = \frac{1}{\sqrt{x^2-1}}$$

$$\operatorname{argcoth}' x = \frac{1}{1-x^2}$$

$$\operatorname{argcosech}' x = \frac{-1}{x\sqrt{1+x^2}}$$