

Universidade do Minho Escola de Ciências

Análise Matemática para Engenharia Licenciatura em Engenharia Informática

2023/2024

Departamento de Matemática

Algumas regras de derivação

(estão a ser omitidos os domínios das funções)

$$C'=0$$
, C constante

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

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

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

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

$$sen'x = cos x$$

$$tg'x = sec^2 x$$

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

$$sh'x = ch x$$

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\cos' x = -\sin x$$

$$\cot y' x = -\csc^2 x$$

$$\csc' x = -\csc x \cot x$$

$$ch'x = sh x$$

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

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

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

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

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

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

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

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