

# Derivadas

## Regras de Derivação

- $(cf(x))' = cf'(x)$

- Derivada da Soma

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

- Derivada do Produto

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

- Derivada do Quociente

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

- Regra da Cadeia

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

## Funções Trigonômétricas Inversas

- $\frac{d}{dx} \arcsen x = \frac{1}{\sqrt{1-x^2}}$

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

- $\frac{d}{dx} \operatorname{arctg} x = \frac{1}{1+x^2}$

- $\frac{d}{dx} \operatorname{arcsec} x = \frac{1}{|x|\sqrt{x^2-1}}$

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

- $\frac{d}{dx} \operatorname{arccossec} x = \frac{-1}{|x|\sqrt{x^2-1}}$

## Funções Simples

- $\frac{d}{dx} c = 0$

- $\frac{d}{dx} x = 1$

- $\frac{d}{dx} cx = c$

- $\frac{d}{dx} x^c = cx^{c-1}$

- $\frac{d}{dx} \left(\frac{1}{x}\right) = \frac{d}{dx} (x^{-1}) = -x^{-2} = -\frac{1}{x^2}$

- $\frac{d}{dx} \left(\frac{1}{x^c}\right) = \frac{d}{dx} (x^{-c}) = -\frac{c}{x^{c+1}}$

- $\frac{d}{dx} \sqrt{x} = \frac{d}{dx} x^{\frac{1}{2}} = \frac{1}{2}x^{-\frac{1}{2}} = \frac{1}{2\sqrt{x}}$

## Funções Exponenciais e Logarítmicas

- $\frac{d}{dx} e^x = e^x$

- $\frac{d}{dx} \ln(x) = \frac{1}{x}$

- $\frac{d}{dx} a^x = a^x \ln(a)$

## Funções Trigonômétricas

- $\frac{d}{dx} \operatorname{sen} x = \operatorname{cos} x$

- $\frac{d}{dx} \operatorname{cos} x = -\operatorname{sen} x,$

- $\frac{d}{dx} \operatorname{tg} x = \operatorname{sec}^2 x$

- $\frac{d}{dx} \operatorname{sec} x = \operatorname{tg} x \operatorname{sec} x$

- $\frac{d}{dx} \operatorname{cotg} x = -\operatorname{cossec}^2 x$

- $\frac{d}{dx} \operatorname{cossec} x = -\operatorname{cossec} x \operatorname{cotg} x$