DEFINIÇÃO DE DERIVADA

$$f'(a) = \lim_{h \to 0} \frac{f(a+h) - f(a)}{h} = \lim_{x \to a} \frac{f(x) - f(a)}{x - a}.$$

REGRAS DE DERIVAÇÃO

1. $(k \cdot f)' = k \cdot f' \qquad k \in \mathbb{R}$
2. $(f + g)' = f' + g'$
3. $(f \cdot g)' = f'g + fg'$
4. $\left(\dfrac{f}{g}\right)' = \dfrac{f'g - fg'}{g^2}$

TABELA

1. $(k)' = 0$	
2. $(x)' = 1$	
3. $(x^\alpha)' = \alpha x^{\alpha-1}, \qquad \alpha \in \mathbb{R}$	$(f^\alpha)' = \alpha f^{\alpha-1} \cdot f', \qquad \alpha \in \mathbb{R}$
4. $(e^x)' = e^x$	$(e^f)' = e^f \cdot f'$
5. $(a^x)' = a^x \cdot \ln a$	$(a^f)' = a^f \cdot f' \cdot \ln a$
6. $(\ln x)' = \dfrac{1}{x}$	$(\ln f)' = \dfrac{f'}{f}$
7. $(\log_a x)' = \dfrac{1}{x} \cdot \dfrac{1}{\ln a}$	$(\log_a f)' = \dfrac{f'}{f} \cdot \dfrac{1}{\ln a}$
8. $(\sin x)' = \cos x$	$(\sin f)' = \cos f \cdot f'$
9. $(\cos x)' = -\sin x$	$(\cos f)' = -\sin f \cdot f'$
10. $(\mathrm{tg}\, x)' = \sec^2 x$	$(\mathrm{tg}\, f)' = \sec^2 f \cdot f'$
11. $(\mathrm{cotg}\, x)' = -\mathrm{cosec}^2\, x$	$(\mathrm{cotg}\, f)' = -\mathrm{cosec}^2 f \cdot f'$
12. $(\sec x)' = \sec x \cdot \mathrm{tg}\, x$	$(\sec f)' = \sec f \cdot \mathrm{tg}\, f \cdot f'$
13. $(\mathrm{cosec}\, x)' = -\mathrm{cosec}\, x \cdot \mathrm{cotg}\, x$	$(\mathrm{cosec}\, f)' = -\mathrm{cosec} f \cdot \mathrm{cotg}\, f \cdot f'$
14. $(\arcsin x)' = \dfrac{1}{\sqrt{1-x^2}}$	$(\arcsin f)' = \dfrac{f'}{\sqrt{1-f^2}}$
15. $(\arccos x)' = \dfrac{-1}{\sqrt{1-x^2}}$	$(\arccos f)' = \dfrac{-f'}{\sqrt{1-f^2}}$
16. $(\mathrm{arctg}\, x)' = \dfrac{1}{1+x^2}$	$(\mathrm{arctg}\, f)' = \dfrac{f'}{1+f^2}$
17. $(\sinh x)' = \cosh x$	$(\sinh f)' = \cosh f \cdot f'$
18. $(\cosh x)' = \sinh x$	$(\cosh f)' = \sinh f \cdot f'$