

DERIVÁCIE ELEMENTÁRNYCH FUNKCIÍ

$$1. [c]' = 0, c \in R$$

$$2. [x^n]' = n x^{n-1}, n \in N, x \in R$$

$$[x^\alpha]' = \alpha x^{\alpha-1}, \alpha \in R, x \in (0, \infty)$$

$$3. [a^x]' = a^x \cdot \ln a, a > 0, a \neq 1, x \in R$$

$$[e^x]' = e^x, x \in R$$

$$4. [\log_a x]' = \frac{1}{x \ln a}, a > 0, a \neq 1, x \in (0, \infty)$$

$$[\ln x]' = \frac{1}{x}, x \in (0, \infty)$$

$$5. [\sin x]' = \cos x, \quad x \in R$$

$$6. [\cos x]' = -\sin x, \quad x \in R$$

$$7. [\operatorname{tg} x]' = \frac{1}{\cos^2 x}, \quad x \neq \frac{\pi}{2} + k\pi, k \in Z$$

$$8. [\operatorname{cotg} x]' = \frac{-1}{\sin^2 x}, \quad x \neq k\pi, k \in Z$$

$$9. \quad [\arcsin x]' = \frac{1}{\sqrt{1-x^2}}, x \in (-1,1)$$

$$10. \quad [\arccos x]' = \frac{-1}{\sqrt{1-x^2}}, x \in (-1,1)$$

$$11. \quad [\operatorname{arctg} x]' = \frac{1}{1+x^2}, x \in R$$

$$12. \quad [\operatorname{arccotg} x]' = \frac{-1}{1+x^2}, x \in R$$

13. Derivácia funkcie typu $f(x)^{g(x)}$

$$(f(x))^{g(x)} = e^{\ln((f(x))^{g(x)})} = e^{g(x) \cdot \ln f(x)}, f(x) > 0$$

$$\begin{aligned} [(f(x))^{g(x)}]' &= [e^{g(x) \cdot \ln f(x)}]' = \\ &= e^{g(x) \cdot \ln f(x)} \cdot (g'(x) \cdot \ln f(x) + g(x) \cdot \frac{f'(x)}{f(x)}) \end{aligned}$$

14. Logaritmické derivovanie

$$[\ln f(x)]' = \frac{f'(x)}{f(x)}, \quad f(x) > 0$$

$$f'(x) = f(x) \cdot [\ln f(x)]'$$