Derivatives of elementary functions:

- $(x^r)' = r\,x^{r-1},\ r \in \mathbb{R}$
- $(e^x)' = e^x$
- $(a^x)' = a^x \ln a,\ a > 0$
- $(\ln x)' = \frac{1}{x}$
- $(\log_a x)' = \frac{1}{x \cdot \ln a}$
- $(\sin x)' = \cos x$
- $(\cos x)' = -\sin x$
- $(\tan x)' = \frac{1}{\cos^2 x}$
- $(\cot x)' = \frac{-1}{\sin^2 x}$
- $(\arcsin x)' = \frac{1}{\sqrt{1-x^2}}$
- $(\arccos x)' = \frac{-1}{\sqrt{1-x^2}}$
- $(\arctan x)' = \frac{1}{1+x^2}$
- $(\mathrm{arccot}\, x)' = \frac{-1}{1+x^2}$

Rules for differentiation

- $(c.f(x))' = c.\ f'(x)$
- $\big(f(x) \pm g(x)\big)' = f'(x) \pm g'(x)$ (Sum rule)
- $\big(f(x).g(x)\big)' = f'(x) \cdot g(x) + f(x) \cdot g'(x)$ (Product rule)
- $\left(\frac{f(x)}{g(x)}\right)' = \frac{f'(x) \cdot g(x) - f(x) \cdot g'(x)}{g^2(x)}$ (Quotient rule)
- $[f(\varphi(x))]' = f'(\varphi(x)) \cdot \varphi'(x)$ (Chain rule)