

Tabella delle formule e regole di derivazione

$$y = f(x)$$

$$y' = f'(x)$$

$$y = \text{costante},$$

$$y' = 0;$$

Funzione potenza:

$$y = x^a,$$

$$y' = ax^{a-1};$$

In particolare:

$$y = x,$$

$$y' = 1;$$

$$y = x^2,$$

$$y' = \text{sgn}x = \frac{x}{|x|};$$

$$y = \sqrt[n]{x},$$

$$y' = \frac{1}{n\sqrt[n]{x^{n-1}}};$$

$$y = \frac{1}{x},$$

$$y' = -\frac{1}{x^2};$$

$$y = \sqrt{x},$$

$$y' = \frac{1}{2\sqrt{x}};$$

Funzioni goniometriche:

$$y = \text{sen}x,$$

$$y' = \text{cos}x;$$

$$y = \text{cos}x,$$

$$y' = -\text{sen}x;$$

$$y = \text{tg}x,$$

$$y' = \frac{1}{\text{cos}^2x} = 1 + \text{tg}^2x;$$

$$y = \text{ctg}x,$$

$$y' = -\frac{1}{\text{sen}^2x} = -(1 + \text{ctg}^2x);$$

Funzione logaritmica:

$$y = \log_a x,$$

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

In particolare:

$$y = \ln x,$$

$$y' = \frac{1}{x};$$

Funzione esponenziale:

$$y = a^x,$$

$$y' = a^x \ln a;$$

In particolare:

$$y = e^x,$$

$$y' = e^x;$$

Funzioni iperboliche:

$$y = \text{sh}x,$$

$$y' = \text{ch}x;$$

$$y = \text{ch}x,$$

$$y' = \text{sh}x;$$

$$y = \text{th}x,$$

$$y' = \frac{1}{\text{ch}^2x};$$

$$y = \text{cth}x,$$

$$y' = -\frac{1}{\text{sh}^2x};$$

Inverse delle funzioni goniometriche:

$$y = \text{arcsen}x,$$

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

$$y = \text{arccos}x,$$

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

$$y = \text{arctg}x,$$

$$y' = \frac{1}{1+x^2};$$

$$y = \text{arccotg}x,$$

$$y' = -\frac{1}{1+x^2};$$

Principali regole di derivazione:

$$y = k f(x) (k = \text{costante}),$$

$$y' = k f'(x);$$

$$y = f(x) + g(x),$$

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

$$y = f(x) \cdot g(x),$$

$$y' = f'(x) \cdot g(x) + g'(x) \cdot f(x);$$

$$y = \frac{f(x)}{g(x)},$$

$$y' = \frac{f'(x) \cdot g(x) - g'(x) \cdot f(x)}{[g(x)]^2};$$

$$y = f[g(x)],$$

$$y' = f'[g(x)] \cdot g'(x);$$

$$y = [f(x)]^n,$$

$$y' = n[f(x)]^{n-1} \cdot f'(x);$$

$$y = a^{f(x)},$$

$$y' = a^{f(x)} \cdot \ln a \cdot f'(x);$$

$$y = e^{f(x)},$$

$$y' = e^{f(x)} \cdot f'(x);$$

$$y = \ln f(x),$$

$$y' = \frac{f'(x)}{f(x)};$$