

**DERIVADAS DE LAS FUNCIONES ELEMENTALES**

| Simple                        |   | Compuesta                         |   |
|-------------------------------|---|-----------------------------------|---|
| Función                       | Derivada  | Función                           | Derivada  |
| $y = k$                       | $y' = 0$  |                                   |   |
| $y = x^n$                     | $y' = nx^{n-1}$   | $y = f(x)^n$                      | $y' = nf(x)^{n-1} \cdot f'(x)$  |
| $y = \frac{1}{x}$             | $y' = \frac{-1}{x^2}$   | $y = \frac{1}{f(x)}$              | $y' = \frac{-f'(x)}{f(x)^2}$  |
| $y = \sqrt{x}$                | $y' = \frac{1}{2\sqrt{x}}$  | $y = \sqrt{f(x)}$                 | $y' = \frac{f'(x)}{2\sqrt{f(x)}}$   |
| $y = \sqrt[n]{x}$             | $y' = \frac{1}{n \cdot \sqrt[n]{x^{n-1}}}$  | $y = \sqrt[n]{f(x)}$              | $y' = \frac{f'(x)}{n \cdot \sqrt[n]{f(x)^{n-1}}}$   |
| $y = e^x$                     | $y' = e^x$  | $y = e^{f(x)}$                    | $y' = f'(x) \cdot e^{f(x)}$   |
| $y = a^x$                     | $y' = a^x \cdot \ln a$  | $y = a^{f(x)}$                    | $y' = f'(x) \cdot a^{f(x)} \cdot \ln a$   |
| $y = \ln x$                   | $y' = \frac{1}{x}$  | $y = \ln f(x)$                    | $y' = \frac{f'(x)}{f(x)}$   |
| $y = \log_a x$                | $y' = \frac{1}{x \ln a}$  | $y = \log_a f(x)$                 | $y' = \frac{f'(x)}{f(x) \ln a}$   |
| $y = \operatorname{sen} x$    | $y' = \cos x$   | $y = \operatorname{sen}(f(x))$    | $y' = f'(x) \cdot \cos(f(x))$   |
| $y = \cos x$                  | $y' = -\operatorname{sen} x$  | $y = \cos(f(x))$                  | $y' = -f'(x) \cdot \operatorname{sen}(f(x))$  |
| $y = \operatorname{tg} x$     | $y' = \frac{1}{\cos^2 x} = 1 + \operatorname{tg}^2 x = \sec^2 x$                                      | $y = \operatorname{tg}(f(x))$     | $y' = \frac{f'(x)}{\cos^2(f(x))} = f'(x) \cdot (1 + \operatorname{tg}^2(f(x))) = f'(x) \sec^2(f(x))$                                    |
| $y = \operatorname{cotg} x$   | $y' = \frac{-1}{\operatorname{sen}^2 x} = -(1 + \operatorname{cotg}^2 x) = -\operatorname{cosec}^2 x$ | $y = \operatorname{cotg}(f(x))$   | $y' = \frac{-f'(x)}{\operatorname{sen}^2(f(x))} = -f'(x) \cdot (1 + \operatorname{cotg}^2(f(x))) = -f'(x) \operatorname{cosec}^2(f(x))$ |
| $y = \sec x$                  | $y' = \frac{\operatorname{sen} x}{\cos^2 x}$  | $y = \sec(f(x))$                  | $y' = \frac{\operatorname{sen}(f(x))}{\cos^2(f(x))} f'(x)$  |
| $y = \operatorname{cosec} x$  | $y' = \frac{-\cos x}{\operatorname{sen}^2 x}$   | $y = \operatorname{cosec}(f(x))$  | $y' = \frac{-\cos(f(x))}{\operatorname{sen}^2(f(x))} f'(x)$   |
| $y = \operatorname{arcsen} x$ | $y' = \frac{1}{\sqrt{1-x^2}}$   | $y = \operatorname{arcsen}(f(x))$ | $y' = \frac{f'(x)}{\sqrt{1-f(x)^2}}$  |
| $y = \operatorname{arccos} x$ | $y' = \frac{-1}{\sqrt{1-x^2}}$  | $y = \operatorname{arccos}(f(x))$ | $y' = \frac{-f'(x)}{\sqrt{1-f(x)^2}}$   |
| $y = \operatorname{arctg} x$  | $y' = \frac{1}{1+x^2}$  | $y = \operatorname{arctg}(f(x))$  | $y' = \frac{f'(x)}{1+f(x)^2}$   |