DERIVADAS

REGLAS DE DERIVACION

$y = k \cdot f(x) \longrightarrow y' = k \cdot f'(x)$

Derivada de la suma: $y = f(x) + g(x) \longrightarrow y' = f'(x) + g'(x)$

Derivada del producto: $y = f(x) \cdot g(x) \longrightarrow y' = f'(x) \cdot g(x) + f(x) \cdot g'(x)$

Derivada del cociente: $y = \frac{f(x)}{g(x)} \longrightarrow y' = \frac{f'(x) \cdot g(x) - f(x) \cdot g'(x)}{[g(x)]^2}$

Derivada de la función compuesta:
(Regla de la cadena) $y = f(g(x)) \longrightarrow y' = f'(g(x)) \cdot g'(x)$

DERIVADAS DE LAS PRINCIPALES FUNCIONES

POTENCIAS

$y = x^n \longrightarrow y' = n \cdot x^{n-1}$ $\qquad$ $y = f(x)^n \longrightarrow y' = n \cdot f(x)^{n-1} \cdot f'(x)$

$y = k \longrightarrow y' = 0$

$y = x \longrightarrow y' = 1$

$y = \sqrt{x} \longrightarrow y' = \frac{1}{2\sqrt{x}}$ $\qquad$ $y = \sqrt{f(x)} \longrightarrow y' = \frac{1}{2\sqrt{f(x)}} \cdot f'(x)$

$y = \sqrt{x} \longrightarrow y = x^{1/2} \longrightarrow y' = \frac{1}{2} \cdot x^{-1/2}$

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

EXPONENCIALES

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

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

LOGARITMOS

$$y = \ln x \longrightarrow y' = \frac{1}{x} \qquad y = \ln[f(x)] \longrightarrow y' = \frac{1}{f(x)} \cdot f'(x)$$

$$y = \log_a x \longrightarrow y' = \frac{1}{x} \cdot \log_a e \qquad y = \log_a[f(x)] \longrightarrow y' = \frac{1}{f(x)} \cdot \log_a e \cdot f'(x)$$

TRIGONOMETRICAS

$$y = \sin x \longrightarrow y' = \cos x \qquad y = \sin[f(x)] \longrightarrow y' = \cos[f(x)] \cdot f'(x)$$

$$y = \cos x \longrightarrow y' = -\sin x \qquad y = \cos[f(x)] \longrightarrow y' = -\sin[f(x)] \cdot f'(x)$$

$$y = \tan x \longrightarrow y' = \frac{1}{\cos^2 x} = \sec^2 x \qquad y = \tan[f(x)] \longrightarrow y' = \frac{1}{\cos^2[f(x)]} \cdot f'(x)$$

$$y = \tan x \longrightarrow y' = 1 + \tan^2 x$$

$$y = \cot x \longrightarrow y' = -\frac{1}{\sin^2 x} = \csc^2 x \qquad y = \cot[f(x)] \longrightarrow y' = -\frac{1}{\sin^2[f(x)]} \cdot f'(x)$$

$$y = \cot x \longrightarrow y' = -(1 + \cot^2 x)$$

HIPERBOLICAS

$$y = \sinh x \longrightarrow y' = \cosh x \qquad y = \sinh[f(x)] \longrightarrow y' = \cosh[f(x)] \cdot f'(x)$$

$$y = \cosh x \longrightarrow y' = \sinh x \qquad y = \cosh[f(x)] \longrightarrow y' = \sinh[f(x)] \cdot f'(x)$$

$$y = \tanh x \longrightarrow y' = \frac{1}{\cosh^2 x} \qquad y = \tanh[f(x)] \longrightarrow y' = \frac{1}{\cosh^2[f(x)]} \cdot f'(x)$$

$$y = \tanh x \longrightarrow y' = 1 - \tanh^2 x$$

INVERSAS

$$y = \arcsin x \longrightarrow y' = \frac{1}{\sqrt{1-x^2}} \qquad y = \arcsin[f(x)] \longrightarrow y' = \frac{1}{\sqrt{1-[f(x)]^2}} \cdot f'(x)$$

$$y = \arccos x \longrightarrow y' = -\frac{1}{\sqrt{1-x^2}} \qquad y = \arccos[f(x)] \longrightarrow y' = -\frac{1}{\sqrt{1-[f(x)]^2}} \cdot f'(x)$$

$$y = \arctan x \longrightarrow y' = \frac{1}{1+x^2} \qquad y = \arctan[f(x)] \longrightarrow y' = \frac{1}{1+[f(x)]^2} \cdot f'(x)$$

$$y = arg\sinh x \longrightarrow y' = \frac{1}{\sqrt{1+x^2}} \qquad y = arg\sinh[f(x)] \longrightarrow y' = \frac{1}{\sqrt{1+[f(x)]^2}} \cdot f'(x)$$

$$y = arg\cosh x \longrightarrow y' = \frac{1}{\sqrt{x^2-1}} \qquad y = arg\cosh[f(x)] \longrightarrow y' = \frac{1}{\sqrt{[f(x)]^2-1}} \cdot f'(x)$$

$$y = arg\tanh x \longrightarrow y' = \frac{1}{1-x^2} \qquad y = arg\tanh[f(x)] \longrightarrow y' = \frac{1}{1-[f(x)]^2} \cdot f'(x)$$