CALCULO DIFERENCIAL

DERIVADA POR DEFINICIÓN

$$f'(x) = \lim_{\Delta x \to 0} \frac{f(x+\Delta x) - f(x)}{\Delta x}$$

$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

$$f'(a) = \lim_{x \to a} \frac{f(x) - f(a)}{x - a}$$

$$\frac{d}{dx}[c] = 0$$

$$\frac{d}{dx}[x] = 1$$

$$\frac{d}{dx}[x^n] = nx^{n-1}$$

$$\frac{d}{dx}[f(x) \pm g(x)] = \frac{d}{dx}[f(x)] \pm \frac{d}{dx}[g(x)]$$

$$\frac{d}{dx}[cf(x)] = c\frac{d}{dx}[f(x)]$$

$$\frac{d}{dx}[uv] = u\frac{dv}{dx} + v\frac{du}{dx}$$

$$\frac{d}{dx}\left[\frac{u}{v}\right] = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}$$

$$\frac{d}{dx}[u^n] = nu^{n-1}\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[sen\ u] = \cos u\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[cos\ u] = -\mathrm{sen}\, u\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[tan\ u] = \sec^2 u\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[cot\ u] = -\csc^2 u\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[sec\ u] = \sec u \cdot \tan u\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[csc\ u] = -\csc u \cdot \cot u\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[arc\ sen\ u] = \frac{1}{\sqrt{1-u^2}}\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[arc\ cos\ u] = -\frac{1}{\sqrt{1-u^2}}\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[arc\ tan\ u] = \frac{1}{1+u^2}\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[arc\ cot\ u] = -\frac{1}{1+u^2}\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[arc\ sec\ u] = \frac{1}{u\sqrt{u^2-1}}\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[arc\ csc\ u] = -\frac{1}{u\sqrt{u^2-1}}\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[\ln u] = \frac{1}{u}\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[\log_a u] = \frac{1}{u \ln a}\ \frac{d}{dx}[u]$$

$$\frac{d}{dx}[e^u] = e^u\frac{d}{dx}[u]$$

$$\frac{d}{dx}[a^u] = a^u(\ln a)\frac{d}{dx}[u]$$

Regla de la cadena

$$\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx}$$