

FORMULARIO DE DERIVADAS. CÁLCULO DIFERENCIAL

$$\frac{d(c)}{dx} = 0 \qquad \frac{d(x)}{dx} = 1$$

Derivada de la suma algebraica

$$\frac{d(u + v - w)}{dx} = \frac{d(u)}{dx} + \frac{d(v)}{dx} - \frac{d(w)}{dx}$$

Derivada del producto

$$\frac{d(cx)}{dx} = c$$

$$\frac{d(cv)}{dx} = c \cdot \frac{d(v)}{dx}$$

$$\frac{d(uv)}{dx} = u \cdot \frac{d(v)}{dx} + v \cdot \frac{d(u)}{dx}$$

Derivada de las potencias

$$\frac{d(x^n)}{dx} = nx^{n-1}$$

$$\frac{d(cx^n)}{dx} = cnx^{n-1}$$

$$\frac{d(v^n)}{dx} = nv^{n-1} \cdot \frac{d(v)}{dx}$$

Derivada de la división

$$\frac{d\left(\frac{u}{v}\right)}{dx} = \frac{v \cdot \frac{d(u)}{dx} - u \cdot \frac{d(v)}{dx}}{v^2}$$

$$\frac{d\left(\frac{u}{c}\right)}{dx} = \frac{\frac{d(u)}{dx}}{c}$$

$$\frac{d\left(\frac{c}{v}\right)}{dx} = -\frac{c}{v^2} \cdot \frac{d(v)}{dx}$$

Derivada de la raíz enésima

$$\frac{d(\sqrt[n]{v})}{dx} = \frac{\frac{d(v)}{dx}}{nv^{\frac{n-1}{n}}}$$

Regla de la cadena

$$\frac{d(y)}{dx} = \frac{d(y)}{d(x)} \cdot \frac{d(x)}{dx}$$

Derivada de la función inversa

$$\frac{d(y)}{dx} = \frac{1}{\frac{d(x)}{dy}}$$

Derivada del valor absoluto

$$\frac{d(|v|)}{dx} = \frac{v}{|v|} \cdot \frac{d(v)}{dx}$$

Derivada de funciones trascendentes

Derivada de función logarítmica

$$\frac{d(\ln v)}{dx} = \frac{\frac{d(v)}{dx}}{v}$$

$$\frac{d(\log v)}{dx} = \frac{\log e}{v} \cdot \frac{d(v)}{dx}$$

Derivada de función exponencial

$$\frac{d(a^v)}{dx} = a^v \ln a \cdot \frac{d(v)}{dx}$$

$$\frac{d(e^v)}{dx} = e^v \cdot \frac{d(v)}{dx}$$

$$\frac{d(u^v)}{dx} = vu^{v-1} \cdot \frac{d(u)}{dx} + u^v \ln u \cdot \frac{d(v)}{dx}$$

Funciones trigonométricas directas

$$\frac{d(\sin v)}{dx} = \cos v \cdot \frac{d(v)}{dx}$$

$$\frac{d(\cos v)}{dx} = -\sin v \cdot \frac{d(v)}{dx}$$

$$\frac{d(\operatorname{tg} v)}{dx} = \sec^2 v \cdot \frac{d(v)}{dx}$$

$$\frac{d(\operatorname{ctg} v)}{dx} = -\csc^2 v \cdot \frac{d(v)}{dx}$$

$$\frac{d(\sec v)}{dx} = \sec v \operatorname{tg} v \cdot \frac{d(v)}{dx}$$

$$\frac{d(\csc v)}{dx} = -\csc v \operatorname{ctg} v \cdot \frac{d(v)}{dx}$$

Funciones trigonométricas inversas

$$\frac{d(\arcsin v)}{dx} = \frac{\frac{d(v)}{dx}}{\sqrt{1-v^2}}$$

$$\frac{d(\arccos v)}{dx} = -\frac{\frac{d(v)}{dx}}{\sqrt{1-v^2}}$$

$$\frac{d(\arctg v)}{dx} = \frac{\frac{d(v)}{dx}}{1+v^2}$$

$$\frac{d(\operatorname{arcctg} v)}{dx} = -\frac{\frac{d(v)}{dx}}{1+v^2}$$

$$\frac{d(\operatorname{arcsec} v)}{dx} = \frac{\frac{d(v)}{dx}}{v\sqrt{v^2-1}}$$

$$\frac{d(\operatorname{arccsc} v)}{dx} = -\frac{\frac{d(v)}{dx}}{v\sqrt{v^2-1}}$$

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