Tabla de Derivadas

Elaborado por el Profesor José Antonio Prieto

Reglas principales para hallar la derivada.

Si c es una constante y $u = f(x)$ y $v = g(x)$ son funciones derivables, entonces:

(1) $(c)' = 0$

(2) $(x)' = 1$

(3) $(u \pm v)' = u' \pm v'$

(4) $(c\,u)' = c\,u'$

(5) $(u\,v)' = u'\,v + u\,v'$

(6) $\left(\dfrac{u}{v}\right)' = \dfrac{u'\,v - u\,v'}{v^2} \quad (v \neq 0)$

(7) $\left(\dfrac{c}{v}\right)' = -\dfrac{c\,v'}{v^2} \quad (v \neq 0)$

(8) $(f \circ g)'(x) = f'(g(x)) \cdot g'(x)$

Tabla de las derivadas de las funciones principales.

(1) $(x^n)' = nx^{n-1}$

(2) $(\sqrt{x})' = \dfrac{1}{2\sqrt{x}} \quad (x > 0)$

(3) $(e^x)' = e^x$

(4) $(a^x)' = a^x \ln(a)$

(5) $(\ln(x))' = \dfrac{1}{x} \quad (x > 0)$

(6) $(\log_a(x))' = \dfrac{1}{x\ln(a)} = \dfrac{\log_a(e)}{x}$
$(x > 0,\ a > 0)$

(7) $(\mathrm{sen}(x))' = \cos(x)$

(8) $(\cos(x))' = -\,\mathrm{sen}(x)$

(9) $(\mathrm{tg}(x))' = \sec^2(x)$

(10) $(\mathrm{ctg}(x))' = -\csc^2(x)$

(11) $(\sec(x))' = \sec(x)\,\mathrm{tg}(x)$

(12) $(\csc(x))' = -\csc(x)\mathrm{ctg}(x)$

(13) $(\mathrm{arc\,sen}(x))' = \dfrac{1}{\sqrt{1-x^2}}$

(14) $(\mathrm{arc\,cos}(x))' = -\dfrac{1}{\sqrt{1-x^2}}$

(15) $(\mathrm{arc\,tg}(x))' = \dfrac{1}{1+x^2}$

(16) $(\mathrm{arcctg}(x))' = -\dfrac{1}{1+x^2}$

(17) $(\mathrm{arcsec}(x))' = \dfrac{1}{|x|\sqrt{x^2-1}}$
Si el $Rang(\mathrm{arcsec}) = \left[0, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \pi\right]$

(18) $(\mathrm{arcsec}(x))' = \dfrac{1}{x\sqrt{x^2-1}}$
Si el $Rang(\mathrm{arcsec}) = \left[0, \frac{\pi}{2}\right) \cup \left[\pi, \frac{3\pi}{2}\right)$

(19) $(\mathrm{arccsc}(x))' = -\dfrac{1}{|x|\sqrt{x^2-1}}$
Si el $Rang(\mathrm{arccsc}) = \left[-\frac{\pi}{2}, 0\right) \cup \left(0, \frac{\pi}{2}\right]$

(20) $(\mathrm{arccsc}(x))' = -\dfrac{1}{x\sqrt{x^2-1}}$
Si el $Rang(\mathrm{arccsc}) = \left(0, \frac{\pi}{2}\right] \cup \left(\pi, \frac{3\pi}{2}\right]$

(21) $(\mathrm{senh}(x))' = \cosh(x)$

(22) $(\cosh(x))' = \mathrm{senh}(x)$

(23) $(\mathrm{tgh}(x))' = \mathrm{sech}^2(x)$

(24) $(\mathrm{ctgh}(x))' = -\mathrm{csch}^2(x)$

(25) $(\mathrm{sech}(x))' = -\mathrm{sech}(x)\,\mathrm{tgh}(x)$

(26) $(\mathrm{csch}(x))' = -\mathrm{csch}(x)\mathrm{ctgh}(x)$

(27) $(\mathrm{arcsenh}(x))' = \dfrac{1}{\sqrt{x^2+1}};\ x \in \mathbb{R}$

(28) $(\mathrm{arccosh}(x))' = \dfrac{1}{\sqrt{x^2-1}};\ x > 1$

(29) $(\mathrm{arctgh}(x))' = \dfrac{1}{1-x^2};\ |x| < 1$

(30) $(\mathrm{arcctgh}(x))' = -\dfrac{1}{x^2-1};\ |x| > 1$

(31) $(\mathrm{arcsech}(x))' = -\dfrac{1}{x\sqrt{1-x^2}};\ 0 < x < 1$

(32) $(\mathrm{arccsch}(x))' = -\dfrac{1}{|x|\sqrt{1+x^2}};\ x \neq 0$