Reglas básicas para derivar.

Función	Derivada
Derivada de una constante	
$f(x) = k$	$f'(x) = 0$
Ejemplos:	
$f(x) = 5$	$f(x) = 0$
$f(x) = -3$	$f(x) = 0$
Derivada de x	
$f(x) = x$	$f'(x) = 1$
Derivadas funciones potenciales	
$f(x) = u^k$	$f'(x) = k.\ u^{k-1}.u'$
Ejemplos	
$f(x) = x^2$	$f'(x) = 2.x$
$f(x) = x^5$	$f'(x) = 5.x^4$
$f(x) = 1/x^5 = x^{-5}$	$f'(x) = -5x^{-6} = -5/x^6$
$f(x) = \sqrt{x} = x^{\frac{1}{2}}$	$f'(x) = \frac{1}{2}.x^{-\frac{1}{2}} = \frac{1}{2\sqrt{x}}$
$f(x) = (2.x^2 + 3)^2$	$f'(x) = 2.(2.x^2 + 3).4x$
Derivadas de funciones exponenciales	
$f(x) = e^u$	$f'(x) = u'.\ e^u$
$f(x) = a^u$	$f'(x) = u'.\ a^u\ .\ \mathrm{Ln}\ a$

f(x) = e^x	f ´(x) = e^x
f(x) = 2^x	f ´(x) =. 2^x . Ln 2

Derivadas de funciones logarítmicas

f(x) = Ln u	f ´(x) = u´ /u
f(x) = $\log_a u$	$f'(x) = \frac{u'}{u}\log_a e$

Ejemplos

f(x) = Ln x	f ´(x) = 1 /x
f(x) = $\log_2 x$	$f'(x) = \frac{1}{x}\log_2 e$

Derivadas de funciones trigonométricas

f(x)= sen u	f ´(x)= u´ . cos u
f(x)= cos u	f ´(x)= - u´ . sen u
f(x)= tg u	f ´(x)= u´ . $\sec^2$ u
f(x) = cotg u	f ´(x)= -u´ . cosec^2 u
f(x) = sec u	f ´(x)= u´ . sec u . tg u
f(x) = cosec u	f ´(x)= - u´ . cosec u . cotg u
f(x) = arcsen u	$f'(x) = \frac{u'}{\sqrt{1 - u^2}}$
f(x) = arccos u	$f'(x) = \frac{-u'}{\sqrt{1 - u^2}}$
f(x) = arctg u	$f'(x) = \frac{u'}{1 + u^2}$

f(x)= sen x	f ´(x)= cos x
f(x)= cos x	f ´(x)= - sen x
f(x)= tg x	f ´(x)= $\sec^2 x$
f(x) = cot x	f ´(x)= - $\text{cosec}^2 x$
f(x) = sec x	f ´(x)= sec x . tg x
f(x) = cosec x	f ´(x)= - cosec x . cotg x
f(x) = arcsen x	$f'(x) = \frac{1}{\sqrt{1 - x^2}}$
f(x) = arccos x	$f'(x) = \frac{-1}{\sqrt{1 - x^2}}$
f(x) = arctg x	$f'(x) = \frac{1}{1 + x^2}$

Derivadas de sumas, restas, productos y cocientes de funciones

f(x) = K.u	f ´(x) = K.u´
f(x) = u + v -w	f´(x) = u´ + v´ - w´
f(x) = u . v	f´(x) = u´. v + v´. u
f(x) = $\frac{u}{v}$	f´(x) = $\frac{u'.v - v'.u}{v^2}$

Ejemplos

f(x) = $3x^2$	f ´(x) = 3.2.x= 6x
f(x) = $x^4 + x^3 - 2x$	f´(x) = $3x^3+3x^2$ - 2
f(x) = x^3 . sen x	f´(x) =$3x^2$.sen x + x^3.cosx