TABLA DE DERIVADAS

FUNCIÓN	FUNCIÓN DERIVADA	FUNCIÓN	FUNCIÓN DERIVADA
a	0	$\operatorname{sen} x$	$\cos x$
x	1	$\operatorname{sen} u$	$u'\cos u$
x^2	$2x$	$\cos x$	$-\operatorname{sen} x$
x^m	$m\cdot x^{m-1}$	$\cos u$	$-u'\operatorname{sen} u$
$f(x)+g(x)$	$f'(x)+g'(x)$	tgx	$\frac{1}{\cos^2 x}=1+tg^2x$
$k.f(x)$	$k.f'(x)$	tgu	$\frac{u'}{\cos^2 u}$
$f(x)\cdot g(x)$	$f'(x)\cdot g(x)+f(x)\cdot g'(x)$	$\cot gx$	$\frac{-1}{\operatorname{sen}^2 x}=-(1+\cot g^2 x)$
$\frac{f(x)}{g(x)}$	$\frac{f'(x)\cdot g(x)-f(x)\cdot g'(x)}{g^2(x)}$	$\cot g\ u$	$\frac{-u'}{\operatorname{sen}^2 u}=-(1+\cot g^2 u)\cdot u'$
$\frac{1}{f(x)}$	$\frac{-f'(x)}{f^2(x)}$	$\sec x$	$tg\ x\cdot\sec x$
$(f\circ g)(x)$	$f'(g(x))\cdot g'(x)$	$\sec u$	$u'\cdot tg\ u\cdot\sec u$
u^m	$m\cdot u^{m-1}\cdot u'$	$\operatorname{cosec} x$	$-\cot g\ x\cdot\operatorname{cosec} x$
$\ln x$	$\frac{1}{x}$	$\operatorname{cosec} u$	$-u'\cdot\cot g\ u\cdot\operatorname{cosec} u$
$\ln u$	$\frac{u'}{u}$	$\operatorname{arc\,sen} x$	$\frac{1}{\sqrt{1-x^2}}$
$\lg_a x=\frac{\ln x}{\ln a}$	$\frac{1}{x\ln a}$	$\operatorname{arc\,sen} u$	$\frac{u'}{\sqrt{1-u^2}}$
$\lg_a u$	$\frac{u'}{u\ln a}$	$\operatorname{arc\,cos} x$	$\frac{-1}{\sqrt{1-x^2}}$
e^x	e^x	$\operatorname{arc\,cos} u$	$\frac{-u'}{\sqrt{1-u^2}}$
e^u	$u'e^u$	$\operatorname{arc\,tg} x$	$\frac{1}{1+x^2}$
a^x	$a^x.\ln a$	$\operatorname{arc\,tg} u$	$\frac{u'}{1+u^2}$
a^u	$a^u.\ln a\ u'$	$\operatorname{arc\,ctg} x$	$\frac{-1}{1+x^2}$
u^v	$u^v\left(v'\ln u+\frac{v.u'}{u}\right)$	$\operatorname{arc\,ctg} u$	$\frac{-u'}{1+u^2}$

a,k ,m son constantes

u,v,f,g,son funciones de la variable x

FÓRMULAS DE TRIGONOMETRIA

$\operatorname{sen}\alpha = \dfrac{\text{cat.opuesto}}{\text{hipotenusa}}$	$\cos\alpha = \dfrac{\text{cat.adyacente}}{\text{hipotenusa}}$	$\operatorname{tg}\alpha = \dfrac{\text{cat.opuesto}}{\text{cat.adyacente}} = \dfrac{\operatorname{sen}\alpha}{\cos\alpha}$
$\operatorname{cosec}\alpha = \dfrac{1}{\operatorname{sen}\alpha}$	$\sec\alpha = \dfrac{1}{\cos\alpha}$	$\operatorname{tg}\alpha = \dfrac{1}{\operatorname{cotg}\alpha}$
$\mathbf{sen^2}\alpha + \mathbf{cos^2}\,\alpha = \mathbf{1}$	$1 + \operatorname{tg}^2\alpha = \sec^2\alpha$	$1 + \operatorname{cotg}^2\alpha = \operatorname{cosec}^2\alpha$
$\operatorname{sen}(\alpha+\beta) = \operatorname{sen}\alpha\cdot\cos\beta + \cos\alpha\cdot\operatorname{sen}\beta$ $\operatorname{sen}(\alpha-\beta) = \operatorname{sen}\alpha\cdot\cos\beta - \cos\alpha\cdot\operatorname{sen}\beta$	$\operatorname{sen}2\alpha = 2\cdot\operatorname{sen}\alpha\cdot\cos\alpha$	$\operatorname{sen}\dfrac{\alpha}{2} = \pm\sqrt{\dfrac{1-\cos\alpha}{2}}$
$\cos(\alpha+\beta) = \cos\alpha\cdot\cos\beta - \operatorname{sen}\alpha\cdot\operatorname{sen}\beta$ $\cos(\alpha-\beta) = \cos\alpha\cdot\cos\beta + \operatorname{sen}\alpha\cdot\operatorname{sen}\beta$	$\cos 2\alpha = \cos^2\alpha - \operatorname{sen}^2\alpha$	$\cos\dfrac{\alpha}{2} = \pm\sqrt{\dfrac{1+\cos\alpha}{2}}$
$\operatorname{tg}(\alpha+\beta) = \dfrac{\operatorname{tg}\alpha + \operatorname{tg}\beta}{1-\operatorname{tg}\alpha\cdot\operatorname{tg}\beta}$	$\operatorname{tg}2\alpha = \dfrac{2\operatorname{tg}\alpha}{1-\operatorname{tg}^2\alpha}$	$\operatorname{tg}\dfrac{\alpha}{2} = \pm\sqrt{\dfrac{1-\cos\alpha}{1+\cos\alpha}}$

$\operatorname{sen}A + \operatorname{sen}B = 2\cdot\operatorname{sen}\dfrac{A+B}{2}\cdot\cos\dfrac{A-B}{2}$	$\cos A + \cos B = 2\cdot\cos\dfrac{A+B}{2}\cdot\cos\dfrac{A-B}{2}$
$\operatorname{sen}A - \operatorname{sen}B = 2\cdot\cos\dfrac{A+B}{2}\cdot\operatorname{sen}\dfrac{A-B}{2}$	$\cos A - \cos B = -2\cdot\operatorname{sen}\dfrac{A+B}{2}\cdot\operatorname{sen}\dfrac{A-B}{2}$

Teorema de los senos:	$\dfrac{a}{\operatorname{sen}A} = \dfrac{b}{\operatorname{sen}B} = \dfrac{c}{\operatorname{sen}C} = 2R$ (R=radio de la circunferencia circunscrita al triángulo ABC)
Teorema del coseno:	$a^2 = b^2 + c^2 - 2\cdot b\cdot c\cdot\cos A$
Área de un triángulo ABC:	$S = \dfrac{1}{2}b\cdot h_b = \dfrac{1}{2}b\cdot a\cdot\operatorname{sen}C$ $\qquad S = \dfrac{a\cdot b\cdot c}{4\cdot R}$
Fórmula de Herón: (p es el semiperímetro del triángulo)	$S = \sqrt{p(p-a)(p-b)(p-c)}$ donde $p = \dfrac{a+b+c}{2}$

FÓRMULAS DE LOGARITMOS

$\log_a N = b \iff a^b = N \qquad a > 0$	$\log_a M\cdot N = \log_a M + \log_a N$
$\log_a a = 1$	$\log_a \dfrac{M}{N} = \log_a M - \log_a N$
$\log_a 1 = 0$	$\log_a M^N = N\cdot\log_a M$
$\log_a a^m = m$	$\log_a M = \dfrac{\log_b M}{\log_b a}$
Si $a = 10 \to \log_a N = \log N \to$ (logaritmos decimales) Si $a = e \to \log_a N = \ln N \to$ (logaritmos neperianos)	NOTA: $e = \lim\limits_{n\to+\infty}\left(1+\dfrac{1}{n}\right)^n = 2'718281....$