Tabla de derivadas e integrales

Función	Derivada	Integrada
$y = c$	0	$y = cx$
$y = cx$	$y' = c$	$c\frac{x^2}{2}$
$y = x^n$	$y' = nx^{n-1}$	$\frac{x^{n+1}}{n+1}$
$y = x^{-n}$	$y' = -\frac{1}{nx^{n-1}}$	$\frac{x^{-n+1}}{-n+1}$
$y = \sqrt{x} = x^{1/2}$	$y' = \frac{1}{2x^{1/2}}$	$\frac{2}{3}x^{3/2}$
$y = \sqrt[b]{x^a} = x^{a/b}$	$y' = \frac{a}{bx^{(a/b-1)}}$	$\frac{x^{(a/b+1)}}{\frac{a}{b}+1}$
$y = \frac{1}{x}$	$y' = -\frac{1}{x^2}$	$\ln x$
y=sen *x*	*y'*=cos *x*	*-cos x*
y=cos *x*	*y'*=-sen *x*	*sen x*
y=tg x	$y' = \frac{1}{\cos^2 x} = \sec^2 x$	*-ln cos x*
y=cotg x	$y' = \frac{1}{sen^2 x} = \sec^2 x$	*ln sen x*
y=sec x	$y' = \sec x tgx = \frac{senx}{\cos^2 x}$	$\ln tg\left\|\frac{x}{2}\right\| = \ln\left\|\sec x + tgx\right\|$
y=cosec x	$y' = -\cos ecx \cot gx = -\frac{\cos x}{sen^2 x}$	*ln(cosec x-cotg x)*
y=arcsen x	$y' = \frac{1}{\sqrt{1-x^2}}$	$x.arcsenx + \sqrt{1-x^2}$
y=arccos x	$y' = -\frac{1}{\sqrt{1-x^2}}$	$x.\arccos x - \sqrt{1-x^2}$
y=arctg x	$y' = \frac{1}{1+x^2}$	$x.arctgx - \frac{\ln\left\|1+x^2\right\|}{2}$
y=arccotg x	$y' = -\frac{1}{1+x^2}$	$x.arctgx + \frac{\ln\left\|1+x^2\right\|}{2}$
Y=arcsec x	$y' = \frac{1}{x\sqrt{x^2-1}}$	$xArcSecx - \ln\left\|x\left(1+\sqrt{\frac{x^2-1}{x^2}}\right)\right\|$
Y=arccosec x	$y' = -\frac{1}{x\sqrt{x^2-1}}$	
y=senh x	*y'=cosh x*	*cosh x*

y=cosh x	*y'=senh x*	*senh x*
y=tgh x	$y' = \sec h^2 x$	*ln cosh x*
y=cotgh x	$y' = -\cos ech^2 x$	*ln senh x*
y=ln x	$y' = \frac{1}{x}$	$x \ln\lvert x \rvert - x$
$y = \log_a x$	$y' = \frac{1}{x \ln a}$	$\frac{-x + x \ln\lvert x \rvert}{\ln\lvert a \rvert}$
$y = e^x$	$y' = e^x$	e^x
$y = a^x$	$y' = a^x \ln a$	$y' = \frac{a^x}{\ln a}$
$y = e^u$	$y' = e^u u'$	
$y = uv$	$y' = u'v + uv'$	$\int udv + \int vdu$
$y = \frac{u}{v}$	$y' = \frac{u'v - uv'}{v^2}$	
$y = u^v$	$y' = u^v \left(v' \ln u + \frac{vu'}{u} \right)$	
$y = \ln_u v$	$y' = \frac{(v'u \ln u - u'v \ln v)}{vu \ln^2 u}$	

Formula de recurrencia

$$\int \frac{dx}{(x^2+1)^2} = \frac{x}{2(x^2+1)} + \frac{1}{2} arctgx$$

Propiedades Integrales definidas

si k=cte $\int_a^b kf_x dx = k \int_a^b f_x dx$

Aditiva: si $c \in (a,b) \Rightarrow \int_a^b f_x dx = \int_a^c f_x dx + \int_c^b f_x dx$

$$\int_a^a f_x dx = 0$$

$$\int_a^b f_x dx = -\int_b^a f_x dx$$

Regla de Barrow

$$\int_a^b f_x dx = F_{(b)} - F_{(a)}$$

Teorema del valor medio del calculo integral

$$f_{(c)} = \frac{1}{b-a} \int_a^b f_{(x)} dx$$

Identidades Trigonometricas		
$sen^2 x + \cos^2 x = 1$	$tgx = \frac{senx}{\cos x}$	$\cot gx = \frac{\cos x}{senx}$
$\sec x = \frac{1}{\cos x}$	$\cos ecx = \frac{1}{senx}$	$1 + tg^2 x = \sec^2 x$
$1 + \cot g^2 x = \cos ec^2 x$	$sen(x \pm y) = senx.\cos y \pm seny.\cos x$	$\cos(x \pm y) = \cos x.\cos y \pm seny.senx$
$tg(x \pm y) = \frac{tgx \pm tgy}{1 \pm tgx.tgy}$	$sen(2x) = 2senx.\cos x$	$\cos(2x) = \cos^2 x - sen^2 x$ $\cos(2x) = 1 - 2sen^2 x = 2\cos^2 x - 1$
$sen\left(\frac{x}{2}\right) = \pm\sqrt{\frac{1-\cos x}{2}}$	$\cos\left(\frac{x}{2}\right) = \pm\sqrt{\frac{1+\cos x}{2}}$	$tg\left(\frac{x}{2}\right) = \pm\sqrt{\frac{1-\cos x}{1+\cos x}} = \frac{senx}{1-cox} =$ $= \frac{1-\cos x}{senx} = \cos ecx - \cot gx$
$sen^2 x = \frac{1-\cos 2x}{2}$	$\cos^2 x = \frac{1+\cos 2x}{2}$	
$senx + seny = 2sen\left(\frac{x+y}{2}\right)\cos\left(\frac{x-y}{2}\right)$	$senx - seny = 2sen\left(\frac{x-y}{2}\right)\cos\left(\frac{x+y}{2}\right)$	
$\cos x + \cos y = 2\cos\left(\frac{x+y}{2}\right)\cos\left(\frac{x-y}{2}\right)$	$\cos x - \cos y = 2sen\left(\frac{x+y}{2}\right)sen\left(\frac{x-y}{2}\right)$	