Derivadas

Propiedades

Derivada de la suma o resta:	Derivada del producto por un número:
$(f(x)\pm g(x))' = f'(x)\pm g'(x)$	$(k.f(x))' = k.f'(x)$
Derivada del producto:	**Derivada del cociente:**
$(f(x).g(x))' = f'(x).g(x)+f(x).g'(x)$	$\left(\frac{f(x)}{g(x)}\right)' = \frac{f'(x).g(x)-f(x).g'(x)}{(g(x))^2}$
Derivada de la composición (R. cadena):	
$(f(g(x)))' = f'(g(x)).g'(x)$	

Derivadas inmediatas

FUNCIÓN	DERIVADA	DERIVADA COMPUESTA
$f(x)=k$	$f'(x)=0$	
$f(x)=x$	$f'(x)=1$	
$f(x)=x^n$	$f'(x)=nx^{n-1}$	$(g^n(x))'=n.g^{n-1}(x).g'(x)$
$f(x)=\sqrt{x}$	$f'(x)=\frac{1}{2\sqrt{x}}$	$(\sqrt{g(x)})'=\frac{1}{2\sqrt{g(x)}}.g'(x)$
$f(x)=Ln(x)$	$f'(x)=\frac{1}{x}$	$(Ln(g(x)))'=\frac{1}{g(x)}.g'(x)$
$f(x)=\log_a(x)$	$f'(x)=\frac{1}{xLa}$	$(\log_a(g(x)))'=\frac{g'(x)}{g(x)La}$
$f(x)=e^x$	$f'(x)=e^x$	$(e^{g(x)})'=e^{g(x)}.g'(x)$
$f(x)=a^x$	$f'(x)=a^x.Ln(a)$	$(a^{g(x)})'=a^{g(x)}.Ln(a).g'(x)$
$f(x)=sen(x)$	$f'(x)=\cos(x)$	$(sen(g(x)))'=\cos(g(x)).g'(x)$
$f(x)=cos(x)$	$f'(x)=-sen(x)$	$(\cos(g(x)))'=-sen(g(x)).g'(x)$
$f(x)=tag(x)$	$f'(x)=\frac{1}{\cos^2(x)}$	$(tag(g(x)))'=\frac{1}{\cos^2(g(x))}.g'(x)$
$f(x)=arcsen(x)$	$f'(x)=\frac{1}{\sqrt{1-x^2}}$	$(arcsen(g(x)))'=\frac{1}{\sqrt{1-g^2(x)}}.g'(x)$
$f(x)=arccos(x)$	$f'(x)=\frac{-1}{\sqrt{1-x^2}}$	$(\arccos(g(x)))'=\frac{-1}{\sqrt{1-g^2(x)}}.g'(x)$
$f(x)=arctag(x)$	$f'(x)=\frac{1}{1+x^2}$	$(arctag(g(x)))'=\frac{1}{1+g^2(x)}.g'(x)$
$f(x)=\cot g(x)$	$f'(x)=\cos ec^2(x)$	$(\cot g(g(x)))'=\cos ec^2(g(x)).g'(x)$
$f(x)=\sec(x)$	$f'(x)=\sec(x)\,tag(x)=\frac{sen(x)}{\cos^2(x)}$	$(\sec(g(x)))'=\sec(g(x))tag(g(x)).g'(x)$
$f(x)=\text{cosec}(x)$	$f'(x)=-\text{cosec}(x)\text{cotg}(x)=-\frac{\cos(x)}{sen^2(x)}$	$(\text{cosec}(g(x)))'=-\text{cosec}(g(x))\cot g(g(x)).g'(x)$

Casos particulares

$y=f(x)^{g(x)}$

1) Tomamos logaritmos.
2) Derivamos.
3) Despejamos y'.
4) Sustituimos el valor de y.

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Integrales

Primitiva

Primitiva de una función: Sea F(x) la primitiva de f(x): $F'(x)=f(x)$; $\int f(x)\,dx = F(x)+C$

Propiedades

Integración por partes	Derivada del producto por un número:
$\int_a^b u dv = [uv]_a^b - \int_a^b v du$	$(k.f(x))' = k.f'(x)$

Integrales inmediatas

FUNCIÓN	INTEGRAL	INTEGRAL COMPUESTA
$f(x)=x$	$\int a\cdot dx = ax+C$	
$f(x)=x^n$	$\int x^n dx=\frac{x^{n+1}}{n+1}+C \quad (n\neq -1)$	$\int [u(x)]^n\cdot u'(x)dx=\frac{[u(x)]^{n+1}}{n+1}+C$
$f(x)=\sqrt{x}$	$\int \frac{1}{2\sqrt{x}}dx=\sqrt{x}+C$	$\int \frac{u'(x)}{2\sqrt{u(x)}}dx=\sqrt{u(x)}+C$
$f(x)=Ln(x)$	$\int \frac{1}{x}dx = L\|x\|+C$	$\int \frac{u'(x)}{u(x)}dx = L\|u(x)\|+C$
$f(x)=\log_a(x)$	$\int \frac{1}{xLa}dx=\log_a x + C$	$\int \frac{u'(x)}{u(x)La}dx=\log_a u(x)+C$
$f(x)=e^x$	$\int e^x dx = e^x + C$	$\int e^{u(x)}\cdot u'(x)dx = e^{u(x)}+C$
$f(x)=a^x$	$\int a^x dx=\frac{a^x}{La}+C$	$\int a^{u(x)}\cdot u'(x)dx=\frac{a^{u(x)}}{La}+C$
$f(x)=sen(x)$	$\int senxdx=-\cos x+C$	$\int sen\,u(x)\cdot u'(x)dx=-\cos u(x)+C$
$f(x)=cos(x)$	$\int \cos xdx = senx + C$	$\int \cos u(x)\cdot u'(x)dx = sen\,u(x)+C$
$f(x)=tag(x)$	$\int \frac{1}{cos^2 x}dx=\tan x + C$	$\int \frac{u'(x)}{cos^2(u(x))}dx=\tan u(x)+C$
$f(x)=arcsen(x)$	$\int \frac{1}{\sqrt{1-x^2}}dx=arcsenx+C$	$\int \frac{u'(x)}{\sqrt{1-[u(x)]^2}}dx = arcsen\,u(x)+C$
$f(x)=arccos(x)$	$\int \frac{-1}{\sqrt{1-x^2}}dx=\arccos x+C$	$\int \frac{-u'(x)}{\sqrt{1-u^2(x)}}dx=\arccos u(x)+C$
$f(x)=arctag(x)$	$\int \frac{1}{1+x^2}dx=arctgx+C$	$\int \frac{u'(x)}{1+[u(x)]^2}dx=arctg\,u(x)+C$
$f(x)=\cot g(x)$	$\int \frac{1}{sen^2 x}dx=-\text{cotan}\,x+C$	$\int \frac{u'(x)}{sen^2(u(x))}dx=-\text{cotan}\,u(x)+C$
$f(x)=\sec(x)$	$\int \sec^2 xdx=tgx+C$	$\int \sec^2 u(x)\cdot u'(x)dx=tg\,u(x)+C$
$f(x)=\text{cosec}(x)$	$\int cosecx\cdot cotgx\,dx=-cosecx+C$	$\int u'(x)cosecu(x)\cdot cotgu(x)\,dx=-cosecu(x)+C$

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