TABLA DE DERIVADAS

NOTA: *u* y *v* representan, cada una, una expresión en función de *x* (aparece *x* en la misma), mientras que *k*, *n* y *a* son números reales.

PROPIEDADES BÁSICAS	
$y = ku \Rightarrow y' = ku', \quad k \in R$	$y = u \pm v \Rightarrow y' = u' \pm v'$
$y = u \cdot v \Rightarrow y' = u'v + uv'$	$y = \frac{u}{v} \Rightarrow y' = \frac{u'v - uv'}{v^2}$

FUNCIÓN	DERIVADA	Ejemplos	
Constante			
$y = k$	$y' = 0$	$y = 5$	$y' = 0$
Identidad			
$y = x$	$y' = 1$	$y = 4x$	$y' = 4$
Potenciales			
$y = u^n$	$y' = nu^{n-1}u'$	$y = (2x+7)^4$	$y' = 8(2x+7)^3$
$y = \sqrt{u}$	$y' = \frac{u'}{2\sqrt{u}}$	$y = \sqrt{3x}$	$y' = \frac{3}{2\sqrt{3x}}$
$y = \sqrt[n]{u}$	$y' = \frac{u'}{n\sqrt[n]{u^{n-1}}}$	$y = \sqrt[4]{7x}$	$y' = \frac{7}{4\sqrt[4]{(7x)^3}}$
Exponenciales			
$y = e^u$	$y' = u'e^u$	$y = e^{4x+5}$	$y' = 4e^{4x+5}$
$y = a^u$	$y' = u'a^u \ln a$	$y = 3^{7x-5}$	$y' = 7 \cdot 3^{7x-5} \ln 3$
Logarítmicas			
$y = \ln u$	$y' = \frac{u'}{u}$	$y = \ln(2x+7)$	$y' = \frac{2}{2x+7}$
$y = \log_a u$	$y' = \frac{u'}{u}\log_a e = \frac{u'}{u}\frac{1}{\ln a}$	$y = \log_2(3x+4)$	$y' = \frac{3}{3x+4}\log_2 e$
Trigonométricas			
$y = \operatorname{sen} u$	$y' = u' \cos u$	$y = \operatorname{sen} 2x$	$y' = 2\cos 2x$
$y = \cos u$	$y' = -u' \operatorname{sen} u$	$y = \cos x^3$	$y' = -3x^2 \operatorname{sen} x^3$
$y = \operatorname{tg} u$	$y' = \frac{u'}{\cos^2 u} = u'(1+\operatorname{tg}^2 u)$	$y = \operatorname{tg} 5x$	$y' = \frac{5}{\cos^2 5x} = 5(1+\operatorname{tg}^2 5x)$
$y = \operatorname{cotg} u$	$y' = -\frac{u'}{\operatorname{sen}^2 u} = -u'(1+\operatorname{cotg}^2 u)$	$y = \operatorname{cotg}(3x+2)$	$y' = -\frac{3}{\operatorname{sen}^2(3x+2)}$
$y = \sec u$	$y' = u' \sec u \operatorname{tg} u$	$y' = \sec 3x$	$y' = 3\sec 3x \operatorname{tg} 3x$
$y = \operatorname{cosec} u$	$y' = -u' \operatorname{cosec} u \operatorname{cotg} u$	$y' = \operatorname{cosec} x^2$	$y' = -2x \operatorname{cosec} x^2 \operatorname{cotg} x^2$
$y = \operatorname{arcsen} u$	$y' = \frac{u'}{\sqrt{1-u^2}}$	$y = \operatorname{arcsen} x^2$	$y' = \frac{2x}{\sqrt{1-x^4}}$
$y = \arccos u$	$y' = -\frac{u'}{\sqrt{1-u^2}}$	$y = \arccos 5x$	$y' = -\frac{5}{\sqrt{1-25x^2}}$
$y = \operatorname{arctg} u$	$y' = \frac{u'}{1+u^2}$	$y = \operatorname{arctg} 2x$	$y' = \frac{2}{1+4x^2}$

TABLA DE INTEGRALES INMEDIATAS

NOTA: *u* y *v* representan expresiones que son funciones de *x*

PROPIEDADES BÁSICAS	
$\int ku\,dx = k\int u\,dx$	$\int (u \pm v)\,dx = \int u\,dx \pm \int v\,dx$
Integración por partes: $\int u\,dv = uv - \int v\,du$	Cambio de variable: $\int f(u)u'\,dx = \int f(t)dt$, llamando $t = u(x)$

INTEGRALES INMEDIATAS	Ejemplos
Potenciales	
$\int dx = x + C$	$\int 5dx = 5\int dx = 5x + C$
$\int u' u^n dx = \dfrac{u^{n+1}}{n+1} + C \qquad (n \neq -1)$	$\int x^3 dx = \dfrac{x^4}{4} + C$; $\int 3(3x+1)^2 dx = \dfrac{(3x+1)^3}{3} + C$
$\int \dfrac{u'}{2\sqrt{u}} dx = \sqrt{u} + C$	$\int \dfrac{3x^2}{2\sqrt{x^3+1}} dx = \sqrt{x^3+1} + C$
Exponenciales y logarítmicas	
$\int u' e^u dx = e^u + C$	$\int 4x^3 e^{x^4+3} dx = e^{x^4+3} + C$
$\int u' a^u dx = \dfrac{a^u}{\ln a} + C$	$\int 7 \cdot 2^{7x} dx = \dfrac{2^{7x}}{\ln 2} + C$
$\int \dfrac{u'}{u} dx = \ln\lvert u\rvert + C$	$\int \dfrac{3x^2}{x^3+1} dx = \ln\lvert x^3+1\rvert + C$
Trigonométricas	
$\int u' \operatorname{sen} u\,dx = -\cos u + C$	$\int 2x \operatorname{sen}(x^2+5)dx = -\cos(x^2+5) + C$
$\int u' \cos u\,dx = \operatorname{sen} u + C$	$\int 3x^2 \cos(x^3-1)dx = \operatorname{sen}(x^3-1) + C$
$\int u' \operatorname{tg} u\,dx = -\ln\lvert \cos u\rvert + C$	$\int (2x+1)\operatorname{tg}(x^2+x)dx = -\ln\lvert\cos(x^2+x)\rvert + C$
$\int u' \operatorname{cotg} u\,dx = \ln\lvert \operatorname{sen} u\rvert + C$	$\int 2x \operatorname{cotg} x^2 dx = \ln\lvert \operatorname{sen} x^2\rvert + C$
$\int \dfrac{u'}{\cos^2 u} dx = \operatorname{tg} u + C$	$\int \dfrac{3}{\cos^2 3x} dx = \operatorname{tg} 3x + C$
$\int u' \sec^2 u\,dx = \operatorname{tg} u + C$	$\int (3x^2+1)\sec^2(x^3+x+1)\,dx = \operatorname{tg}(x^3+x+1) + C$
$\int u'(1+\operatorname{tg}^2 u)dx = \operatorname{tg} u + C$	$\int 2(1+\operatorname{tg}^2 2x)dx = \operatorname{tg} 2x + C$
$\int \dfrac{u'}{\operatorname{sen}^2 u} dx = -\operatorname{cotg} u + C$	$\int \dfrac{2x}{\operatorname{sen}^2 x^2} dx = -\operatorname{cotg} x^2 + C$
$\int u' \operatorname{cosec}^2 u\,dx = -\operatorname{cotg} u + C$	$\int (4x^3+1)\operatorname{cosec}^2(x^4+x)\,dx = -\operatorname{cotg}(x^4+x) + C$
$\int u'(1+\operatorname{cotg}^2 u)dx = -\operatorname{cotg} u + C$	$\int 3(1+\operatorname{cotg}^2 3x)dx = -\operatorname{cotg} 3x + C$
$\int \dfrac{u'}{\sqrt{1-u^2}} dx = \operatorname{arcsen} u + C$	$\int \dfrac{2dx}{\sqrt{1-4x^2}} = \operatorname{arcsen} 2x + C$
$\int \dfrac{u'}{1+u^2} dx = \operatorname{arctg} u + C$	$\int \dfrac{e^x}{1+e^{2x}} dx = \operatorname{arctg} e^x + C$