EJERCICIOS PARA APRENDER A DERIVAR

Con esta primera tabla lo que te ofrecemos son las reglas básicas para derivar. De este modo podemos realizar más fácilmente nuestros ejercicios.

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
$f(x) = \sqrt{x} = x^{\frac{1}{2}}$	$f'(x) = \dfrac{1}{2}.x^{-\frac{1}{2}} = \dfrac{1}{2\sqrt{x}}$
$f(x) = (2.x^2 + 3)^2$	$f'(x) = 2.(2.x^2 + 3\,)4x$

Derivadas de funciones exponenciales

$f(x) = e^u$	$f'(x) = u' \cdot e^u$
$f(x) = a^u$	$f'(x) = u' \cdot a^u \cdot \text{Ln } a$

$f(x) = e^x$	$f'(x) = e^x$
$f(x) = 2^x$	$f'(x) =. 2^x . \text{Ln } 2$

Derivadas de funciones logarítmicas

$f(x) = \text{Ln } u$	$f'(x) = u'/u$
$f(x) = \log_a u$	$f'(x) = \dfrac{u'}{u}\log_a e$

Ejemplos

$f(x) = \text{Ln } x$	$f'(x) = 1/x$
$f(x) = \log_2 x$	$f'(x) = \dfrac{1}{x}\log_2 e$

Derivadas de funciones trigonométricas

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

Ejemplos

f(x)= sen x	f ´(x)= cos x
f(x)= cos x	f ´(x)= - sen x
f(x)= tg x	f ´(x)= sec² x
f(x) = cot x	f ´(x)= - cosec² 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	$f'(x) = \dfrac{1}{\sqrt{1-x^2}}$
f(x) = arccos x	$f'(x) = \dfrac{-1}{\sqrt{1-x^2}}$
f(x) = arctg x	$f'(x) = \dfrac{1}{1+x^2}$

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
$f(x) = \dfrac{u}{v}$	$f'(x) = \dfrac{u'.v - v'.u}{v^2}$

Ejemplos

f(x) = 3x²	f ´(x) = 3.2.x= 6x
f(x) = x⁴ + x³ -2x	f´(x) = 3x³+3x² - 2
f(x) = x³ . sen x	f´(x) =3x².sen x + x³.cosx

$$\mathbf{f(x)} \;=\; \frac{sex}{x^2}$$

$$\mathrm{f'(x)} \;=\; \frac{\cos x . x^2 - \ \mathrm{sen}\, x. 2x}{x^Q}$$

A continuación encontrarás una lista con **100 funciones listas para derivar.** No olvides tener en cuenta las reglas vistas anteriormente. Intenta, en la medida de lo posible, simplificar.

1	$f(x) = 0$	
2	$f(x) = -7$	
3	$f(x) = -7x$	
4	$f(x) = -5x+2$	
5	$f(x) = x^5 - x^3 + 3$	
6	$f(x) = 2x^7 - 3x^6 + 3 x^3 - 4x^2 - 7$	
7	$f(x) = \frac{x-3}{2}$	
8	$f(x) = -\frac{x^5 R x - 1}{2}$	
9	$f(x) = -\frac{3}{2}x^3 + \frac{2}{5}x^2 - 4$	
10	$f(x) = \frac{3}{x^2}$	
11	$f(x) = -\frac{2}{x^3} + \frac{3}{x^2} - 4x$	
12	$f(x) = \frac{x^2 - 1}{(xR1)^2}$	
13	$f(x) = \frac{5x^4 - 3x^3}{x^5}$	
14	$f(x) = \sqrt{x^3}$	
15	$f(x) = \frac{1}{\sqrt{x^3}}$	
16	$f(x) = \sqrt{x^3} - \sqrt[3]{x^5}$	
17	$f(x) = -3\sqrt[4]{x} - 2^3\sqrt[3]{x^2}$	
18	$f(x) = -\frac{2}{3}\sqrt[4]{x^3} - \sqrt{15x} - \sqrt[3]{x^5}$	
19	$f(x) = -\frac{3}{2}\sqrt[4]{x^3} - 2x^5 - 5x^2$	
20	$f(x) = \frac{\sqrt{x}\sqrt[3]{x}}{2\sqrt{x}}$	

21	$f(x) = \dfrac{2\sqrt{xR}\ \sqrt[3]{x}}{\sqrt[2]{x}}$	
22	$f(x) = \left(x^5 - x^3 + 3\right)^4$	
23	$f(x) = (x^2 - 2)^3$	
24	$f(x) = (x - 1)(x + 1)^2$	
25	$f(x) = \left(x^5 - x^3 + 3\right)^4$	
26	$f(x) = \sqrt{\left((x^5 - x^3 + 3)\right)}$	
27	$f(x) = \sqrt[5]{x^5 - x^3 + 3}$	
28	$f(x) = \dfrac{1}{\sqrt[5]{x5 - x3R3}}$	
29	$f(x) = \sqrt[3]{\dfrac{x5 - x3R3}{x^2}}$	
30	$f(x) = \sqrt[5]{\dfrac{x^2Rx}{xR1}}$	
31	$f(x) = \sqrt{\dfrac{x^2R2xR1}{x^2-1}}$	
32	$f(x) = \sqrt{\dfrac{x^{2-1}}{x^2-2xR1}}$	
33	$f(x) = e^{xR1}$	
34	$f(x) = -3.\,e^{xR1}$	
35	$f(x) = 7.\,e^{x2R1}$	
36	$f(x) = -3.\,e^{x2Rx-1}$	
37	$f(x) = \sqrt{e^x}$	
38	$f(x) = \sqrt{3e^{xR1}}$	

39	$f(x) = -\dfrac{2}{\sqrt{e^x}}$	
40	$f(x) = e^{xR1} - 3e^x + 2e^{x3}$	
41	$f(x) = 3^{2xR1}$	
42	$f(x) = 7^{x-1}$	
43	$f(x) = 7^{x2-1}$	
44	$f(x) = -\dfrac{1}{\sqrt{2}x}$	
45	$f(x) = 2^{xR1} - 3.5^x$	
46	$f(x) = (2^{xR1} - 3.5^{x\ 3})$	
47	$f(x) = \sqrt{3^{xR1}}$	
48	$f(x) = 7^{\sqrt{xR1}}$	
49	$f(x) = \dfrac{e^{3x}Re^{x^2}}{3}$	
50	$f(x) = \dfrac{7x^2}{x3}$	
51	$f(x) = \dfrac{e^{x^2}}{x3}$	
52	$f(x) = \sqrt[7]{\dfrac{x^2}{x3}}$	
53	$f(x) = \ln(x + 3)$	
54	$f(x) = 7x + \ln(x - 3)$	
55	$f(x) = \ln(x^2 - 3x + 2)$	
56	$f(x) = \dfrac{1}{\ln(x-1)}$	
57	$f(x) = \ln\sqrt{\dfrac{x^{2-1}}{x^2-2xR1}}$	

58	$f(x)=\ln\left(\sqrt{((x^5-x^3+3))}\right)$	
59	$f(x)=\ln\left(\dfrac{e^{x-1}}{e^xR1}\right)$	
60	$f(x)=\log_3(x+2)$	
61	$f(x)=\log(x-3\ ?)$	
62	$f(x)=\ \text{sen}(x+1)$	
63	$f(x)=\ \text{sen}\ (2x^3+2x^2\ ^2)$	
64	$f(x)=\ \text{sen}\ (x+1\ )+5x$	
65	$f(x)=\ \sqrt{(\text{sen}(x+1)\ )}$	
66	$f(x)=\ \cos\ (3x+3\ )$	
67	$f(x)=\ \cos\ (3x^2+3x\ )$	
68	$f(x)=\ \dfrac{1}{\text{sen}(xR1)}$	
69	$f(x)=\ \dfrac{1}{\cos x}+\dfrac{1}{\text{sen}(xR1)}$	
70	$f(x)=\ \dfrac{1}{\text{sen}\,x}-\dfrac{1}{\cos\,x\to1}$	
71	$f(x)=\sqrt[3]{\cos\ (3x+3\ )}$	
72	$f(x)=\dfrac{1}{\text{sen}(xR1)}+\left(x^5-x^3+3\ \right)^x$	
73	$f(x)=\ln\ (x-1\ )+e^{xR1}$	
74	$f(x)=e^{x-3}+\cos(x+1\ \to)x^2$	
75	$f(x)=\tan\ (x-5\ )$	
76	$f(x)=\tan\ (x^3+3\ )$	

77	$f(x) = -\tan(-5x^2 - 7)$	
78	$f(x) = \dfrac{1}{\tan x - 5}$	
79	$f(x) = -\dfrac{3}{\tan xR2}$	
80	$f(x) = \sqrt{(\tan(x - 5))}$	
81	$f(x) = \text{arcsen}(x^2 - 3)$	
82	$f(x) = 3x + \text{arcsen}(3x^3 + 3x - 7)$	
83	$f(x) = \text{arcsen}\sqrt{(x^2 - 3)}$	
84	$f(x) = \text{arcsen}\left(\dfrac{R1}{x-1}\right)$	
85	$f(x) = \sqrt[3]{\text{sen}(x^2 + 3)}$	
86	$f(x) = \sqrt[3]{\tan e^x}$	
87	$f(x) = x^2 . \tan \sqrt{x}$	
88	$f(x) = \dfrac{1R\,sen^2 x}{x}$	
89	$f(x) = \ln(\text{sen } x)$	
90	$f(x) = \text{arctg}(x^2 - 3)$	
91	$f(x) = e^{x2} - 3\ln(\sin x)$	
92	$f(x) = e^{xR3} + ln\;x(-5 +)$ $\cot(x)$	
93	$f(x) = \text{arctg}(\ln x)$	
94	$f(x) = \ln(\ln x)$	
95	$f(x) = \ln(\ln x) + arctg\; x(8 - 1)$	
96	$f(x) = \cot(x^3 - 1)$	

97	$f(x) = \sec x \text{-} e^x$	
98	$f(x) = \csc x + x\dfrac{}{3}$	
99	$f(x) = \cot (x+1)$	
100	$f(x) = e^{x2} - \cot (x^3 - 1)$	