



YO SOY TU PROFE

RECURSOS EDUCATIVOS DE #YSTP

100 derivadas resueltas



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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	
$f(x) = u^k$	$f'(x) = k \cdot u^{k-1} \cdot u'$
Ejemplos	
$f(x) = x^2$	$f'(x) = 2 \cdot x$
$f(x) = x^5$	$f'(x) = 5 \cdot x^4$
$f(x) = 1/x^5 = x^{-5}$	$f'(x) = -5x^{-6} = -5/x^6$
$f(x) = \sqrt{x} = x^{\frac{1}{2}}$	$f'(x) = \frac{1}{2} \cdot x^{-\frac{1}{2}} = \frac{1}{2\sqrt{x}}$
$f(x) = (2 \cdot x^2 + 3)^2$	$f'(x) = 2 \cdot (2 \cdot x^2 + 3) \cdot 4x$
Derivadas de funciones exponenciales	
$f(x) = e^u$	$f'(x) = u' \cdot e^u$
$f(x) = a^u$	$f'(x) = u' \cdot a^u \cdot \ln a$

Ejemplos

$f(x) = e^x$	$f'(x) = e^x$
$f(x) = 2^x$	$f'(x) = 2^x \cdot \ln 2$

Derivadas de funciones logarítmicas

$f(x) = \ln u$	$f'(x) = u' / u$
$f(x) = \log_a u$	$f'(x) = \frac{u'}{u} \log_a e$

Ejemplos

$f(x) = \ln x$	$f'(x) = 1 / x$
$f(x) = \log_2 x$	$f'(x) = \frac{1}{x} \log_2 e$

Derivadas de funciones trigonométricas

$f(x) = \sin u$	$f'(x) = u' \cdot \cos u$
$f(x) = \cos u$	$f'(x) = -u' \cdot \sin u$
$f(x) = \operatorname{tg} u$	$f'(x) = u' \cdot \sec^2 u$
$f(x) = \operatorname{cotg} u$	$f'(x) = -u' \cdot \operatorname{cosec}^2 u$
$f(x) = \sec u$	$f'(x) = u' \cdot \sec u \cdot \operatorname{tg} u$
$f(x) = \operatorname{cosec} u$	$f'(x) = -u' \cdot \operatorname{cosec} u \cdot \operatorname{cotg} u$
$f(x) = \arcsen u$	$f'(x) = \frac{u'}{\sqrt{1 - u^2}}$
$f(x) = \arccos u$	$f'(x) = \frac{-u'}{\sqrt{1 - u^2}}$
$f(x) = \operatorname{arctg} u$	$f'(x) = \frac{u'}{1 + u^2}$

Ejemplos

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

Derivadas de sumas, restas, productos y cocientes de funciones

$f(x) = K \cdot u$	$f'(x) = K \cdot u'$
$f(x) = u + v - w$	$f'(x) = u' + v' - w'$
$f(x) = u \cdot v$	$f'(x) = u' \cdot v + v' \cdot u$
$f(x) = \frac{u}{v}$	$f'(x) = \frac{u' \cdot v - v' \cdot u}{v^2}$

Ejemplos

$f(x) = 3x^2$	$f'(x) = 3 \cdot 2 \cdot x = 6x$
$f(x) = x^4 + x^3 - 2x$	$f'(x) = 3x^3 + 3x^2 - 2$
$f(x) = x^3 \cdot \text{sen } x$	$f'(x) = 3x^2 \cdot \text{sen } x + x^3 \cdot \cos x$

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

$$f'(x) = \frac{\cos x \cdot x^2 - \text{sen } x \cdot 2x}{x^4}$$

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	$f(x) = 0$	$f'(x) = 0$
2	$f(x) = -7$	$f'(x) = 0$
3	$f(x) = -7x$	$f'(x) = -7$
4	$f(x) = -5x + 2$	$f'(x) = -5$
5	$f(x) = x^5 - x^3 + 3$	$f'(x) = 5x^4 - 3x^2$
6	$f(x) = 2x^7 - 3x^6 + 3x^3 - 4x^2 - 7$	$f'(x) = 14x^6 - 18x^5 + 9x^2 - 8x$
7	$f(x) = \frac{x-3}{2}$	$f'(x) = \frac{1}{2}$
8	$f(x) = -\frac{x^3+x-1}{2}$	$f'(x) = -\frac{3x^2+1}{2}$
9	$f(x) = -\frac{3}{2}x^3 + \frac{2}{5}x^2 - 4$	$f'(x) = -\frac{9}{2}x^2 + \frac{4}{5}x$
10	$f(x) = \frac{3}{x^2}$	$f'(x) = -6 \cdot \frac{x}{x^4}$
11	$f(x) = -\frac{2}{x^3} + \frac{3}{x^2} - 4x$	$f'(x) = -6 \cdot \frac{x^2}{x^6} + 6 \frac{x}{x^4} - 4$
12	$f(x) = \frac{x^2-1}{(x+1)^2}$	$f'(x) = \frac{4x^2-2x^2+4x+2}{(x+1)^4}$
13	$f(x) = \frac{5x^4-3x^3}{x^5}$	$f'(x) = \frac{100x^4-45x^3-25x^4+15x^3}{(5x)^2}$
14	$f(x) = \sqrt{x^3}$	$f'(x) = \frac{3 \cdot x}{2}$
15	$f(x) = \frac{1}{\sqrt{x^3}}$	$f'(x) = \frac{3 \cdot \sqrt{x}}{2x^3}$
16	$f(x) = \sqrt{x^3} - \sqrt[3]{x^5}$	$f'(x) = \frac{3}{2}x^{\frac{1}{2}} - \frac{5}{3}x^{\frac{2}{3}}$
17	$f(x) = -3\sqrt{x} - 2\sqrt[3]{x^2}$	$-\frac{3}{2\sqrt{x}} - \frac{4}{3\sqrt[3]{x}} = f'(x)$
18	$f(x) = -\frac{2}{3}\sqrt{x^3} - \sqrt{15x} - \sqrt[3]{x^5}$	$f'(x) = -\sqrt{x} - \frac{\sqrt{15}}{2\sqrt{x}} - \frac{5}{3}\sqrt[3]{x^2}$
19	$f(x) = -\frac{3}{2}\sqrt{x^3} - 2x^5 - 5x^2$	$f'(x) = -\frac{9}{4}\sqrt{x} - 10x^4 - 10x$
20	$f(x) = \frac{\sqrt{x^3\sqrt{x}}}{\sqrt[2]{x}}$	$f'(x) = \frac{1}{3\sqrt[3]{x^2}}$

21	$f(x) = \frac{2\sqrt{x} + \sqrt[3]{x}}{\sqrt[2]{x}}$	
22	$f(x) = (x^5 - x^3 + 3)^4$	
23	$f(x) = (x^2 - 2)^2$	
24	$f(x) = (x - 1) \cdot (x + 1)^2$	
25	$f(x) = (x^5 - x^3 + 3)^4$	
26	$f(x) = \sqrt{((x^5 - x^3 + 3))}$	
27	$f(x) = \sqrt[5]{x^5 - x^3 + 3}$	
28	$f(x) = \frac{1}{\sqrt[5]{x^5 - x^3 + 3}}$	
29	$f(x) = \sqrt[3]{\frac{x^5 - x^3 + 3}{x^2}}$	
30	$f(x) = \sqrt[5]{\frac{x^2 + x}{x + 1}}$	
31	$f(x) = \sqrt{\frac{x^2 + 2x + 1}{x^2 - 1}}$	
32	$f(x) = \sqrt{\frac{x^2 - 1}{x^2 - 2x + 1}}$	
33	$f(x) = e^{x+1}$	
34	$f(x) = -3 \cdot e^{x+1}$	
35	$f(x) = 7 \cdot e^{x^2+1}$	
36	$f(x) = -3 \cdot e^{x^2+x-1}$	
37	$f(x) = \sqrt{e^x}$	
38	$f(x) = \sqrt{3e^{x+1}}$	

39	$f(x) = -\frac{2}{\sqrt{e^x}}$	
40	$f(x) = e^{x+1} - 3e^x + 2e^{x^3}$	
41	$f(x) = 3^{2x+1}$	
42	$f(x) = 7^{x-1}$	
43	$f(x) = 7^{x^2-1}$	
44	$f(x) = -\frac{1}{\sqrt{2^x}}$	
45	$f(x) = 2^{x+1} - 3 \cdot 5^x$	
46	$f(x) = (2^{x+1} - 3 \cdot 5^x)^3$	
47	$f(x) = \sqrt{3^{x+1}}$	
48	$f(x) = 7^{\sqrt{x+1}}$	
49	$f(x) = \frac{e^{3x} + e^{x^2}}{3}$	
50	$f(x) = \frac{7^{x^2}}{x^3}$	
51	$f(x) = \frac{e^{x^2}}{x^3}$	
52	$f(x) = \sqrt{\frac{7^{x^2}}{x^3}}$	
53	$f(x) = \ln(x + 3)$	
54	$f(x) = 7x + \ln(x - 3)$	
55	$f(x) = \ln(x^2 - 3x + 2)$	
56	$f(x) = \frac{1}{\ln(x-1)}$	
57	$f(x) = \ln \sqrt{\frac{x^2-1}{x^2-2x+1}}$	

58	$f(x) = \ln\left(\sqrt{(x^5 - x^3 + 3)}\right)$	
59	$f(x) = \ln\left(\frac{e^x - 1}{e^x + 1}\right)$	
60	$f(x) = \log_3(x + 2)$	
61	$f(x) = \log(x - 3)^2$	
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	$f(x) = \frac{1}{\text{sen}(x+1)}$	
69	$f(x) = \frac{1}{\cos x} + \frac{1}{\text{sen}(x+1)}$	
70	$f(x) = \frac{1}{\text{sen } x} - \frac{1}{\cos(x-1)}$	
71	$f(x) = \sqrt[3]{\cos(3x + 3)}$	
72	$f(x) = \frac{1}{\text{sen}(x+1)} + (x^5 - x^3 + 3)^4$	
73	$f(x) = \ln(x - 1) + e^{x+1}$	
74	$f(x) = e^{x-3} + \cos(x + 1) - x^2$	
75	$f(x) = \tan(x - 5)$	
76	$f(x) = \tan(x^3 + 3)$	

77	$f(x) = -\tan(-5x^2 - 7)$	
78	$f(x) = \frac{1}{\tan(x-5)}$	
79	$f(x) = -\frac{3}{\tan(x+2)}$	
80	$f(x) = \sqrt{\tan(x-5)}$	
81	$f(x) = \arcsen(x^2 - 3)$	
82	$f(x) = 3x + \arcsen(3x^3 + 3x - 7)$	
83	$f(x) = \arcsen\sqrt{(x^2 - 3)}$	
84	$f(x) = \arcsen\left(\frac{x+1}{x-1}\right)$	
85	$f(x) = \sqrt[3]{\sen(x^2 + 3)}$	
86	$f(x) = \sqrt[3]{\tan e^x}$	
87	$f(x) = x^2 \cdot \tan \sqrt{x}$	
88	$f(x) = \frac{1 + \sen^2 x}{x}$	
89	$f(x) = \ln(\sen x)$	
90	$f(x) = \arctg(x^2 - 3)$	
91	$f(x) = e^{x^2} - 3 \ln(\sin x)$	
92	$f(x) = e^{x+3} + \ln(x-5) - \cot(x)$	
93	$f(x) = \arctg(\ln x)$	
94	$f(x) = \ln(\ln x)$	
95	$f(x) = \ln(\ln x) + \arctg(x^3 - 1)$	
96	$f(x) = \cot(x^3 - 1)$	

97	$f(x) = \sec x - e^x$	
98	$f(x) = \operatorname{cosec} x + \frac{x^3}{3}$	
99	$f(x) = \cot (x+1)$	
100	$f(x) = e^{x^2} - \cot (x^3 - 1)$	

Encuentra todas las derivadas resueltas a continuación:

1	$f(x) = 0$	$f'(x) = 0$
2	$f(x) = -7$	$f'(x) = 0$
3	$f(x) = -7x$	$f'(x) = -7$
4	$f(x) = -5x + 2$	$f'(x) = -5$
5	$f(x) = x^5 - x^3 + 3$	$f'(x) = 5x^4 - 3x^2$
6	$f(x) = 2x^7 - 3x^6 + 3x^3 - 4x^2 - 7$	$f'(x) = 14x^6 - 18x^5 + 9x^2 - 8x$
7	$f(x) = \frac{x-3}{2}$	$f(x) = \frac{x}{2} - \frac{3}{2}$ $f'(x) = \frac{1}{2}$
8	$f(x) = -\frac{x^3 + x - 1}{2}$	$f(x) = -\frac{x^3}{2} - \frac{x}{2} + \frac{1}{2}$ $f'(x) = -\frac{3x^2}{2} - \frac{1}{2}$
9	$f(x) = -\frac{3}{2}x^3 + \frac{2}{5}x^2 - 4$	$f'(x) = -\frac{9}{2}x^2 + \frac{4}{5}x$
10	$f(x) = \frac{3}{x^2}$	$f(x) = 3 \cdot x^{-2}$ $f'(x) = -6x^{-3} = \frac{-6}{x^3}$
11	$f(x) = -\frac{2}{x^3} + \frac{3}{x^2} - 4x$	$f(x) = -2 \cdot x^{-3} + 3 \cdot x^{-2} - 4x$ $f'(x) = +6 \cdot x^{-4} - 6 \cdot x^{-3} - 4$ $f'(x) = \frac{6}{x^4} - \frac{6}{x^3} - 4$

12	$f(x) = \frac{x^2 - 1}{(x+1)^2}$	$f(x) = \frac{(x+1) \cdot (x-1)}{(x+1) \cdot (x+1)}$ $f(x) = \frac{(x-1)}{(x+1)}$ $f'(x) = \frac{(x-1)' \cdot (x+1) - (x-1) \cdot (x+1)'}{(x+1)^2}$ $f'(x) = \frac{(x+1) - (x-1)}{(x+1)^2} = \frac{x+1-x+1}{(x+1)^2} = \frac{2}{(x+1)^2}$ $f'(x) = \frac{2}{(x+1)^2}$
13	$f(x) = \frac{5x^4 - 3x^3}{x^5}$	$f(x) = +5 \frac{x^4}{x^5} - 3 \frac{x^3}{x^5}$ $f'(x) = +5x^{4-5} - 3x^{3-5}$ $f(x) = +5x^{-1} - 3x^{-2}$ $f'(x) = -5x^{-2} + 6x^{-3}$ $f'(x) = -\frac{5}{x^2} + \frac{6}{x^3}$
14	$f(x) = \sqrt{x^3}$	$f(x) = x^{\frac{3}{2}}$ $f'(x) = \frac{3}{2} x^{\frac{3}{2} - \frac{2}{2}}$ $f'(x) = \frac{3}{2} x^{\frac{1}{2}}$ $f'(x) = \frac{3}{2} \sqrt{x}$

15	$f(x) = \frac{1}{\sqrt{x^3}}$	$f(x) = \frac{1}{x^{\frac{3}{2}}}$ $f'(x) = -\frac{3}{2} x^{-\frac{3}{2} - \frac{2}{2}}$ $f'(x) = -\frac{3}{2} x^{-\frac{5}{2}}$ $f'(x) = -\frac{3}{2} \frac{1}{\sqrt[2]{x^5}}$ $f'(x) = -\frac{3}{2} \frac{1}{x^2 \sqrt{x}}$
16	$f(x) = \sqrt{x^3} - \sqrt[3]{x^5}$	$f(x) = x^{\frac{3}{2}} - x^{\frac{5}{3}}$ $f'(x) = \frac{3}{2} \cdot x^{\frac{3}{2} - \frac{2}{2}} - \frac{5}{3} x^{\frac{5}{3} - \frac{3}{3}}$ $f'(x) = \frac{3}{2} \cdot x^{\frac{1}{2}} - \frac{5}{3} x^{\frac{2}{3}}$ $f'(x) = \frac{3}{2} \cdot \sqrt{x} - \frac{5}{3} \sqrt[3]{x^2}$
17	$f(x) = -3\sqrt{x} - 2\sqrt[3]{x^2}$	$f(x) = -3x^{\frac{1}{2}} - 2x^{\frac{2}{3}}$ $f'(x) = -\frac{3}{2} x^{\frac{1}{2} - \frac{2}{2}} - \frac{4}{3} x^{\frac{2}{3} - \frac{3}{3}}$ $f'(x) = -\frac{3}{2} \cdot x^{-\frac{1}{2}} - \frac{4}{3} x^{-\frac{1}{3}}$ $f'(x) = \frac{-3}{2\sqrt{x}} - \frac{4}{3\sqrt[3]{x}}$

18	$f(x) = -\frac{2}{3}\sqrt{x^3} - \sqrt{15x} - \sqrt[3]{x^5}$	$f(x) = -\frac{2}{3}x^{\frac{3}{2}} - 15^{\frac{1}{2}}x^{\frac{1}{2}} - x^{\frac{5}{3}}$ $f'(x) = -\frac{2}{3} \cdot \frac{3}{2}x^{\frac{3}{2}-\frac{2}{2}} - \sqrt{15}\frac{1}{2}x^{\frac{1}{2}-\frac{2}{2}} - \frac{5}{3}x^{\frac{5}{3}-\frac{3}{3}}$ $f'(x) = -x^{\frac{1}{2}} - \sqrt{15}\frac{5}{3}x^{-\frac{1}{2}} - x^{\frac{2}{3}}$ $f'(x) = -\sqrt{x} - \frac{\sqrt{15}}{2\sqrt{x}} - \frac{5}{3}\sqrt[3]{x^2}$
19	$f(x) = -\frac{3}{2}\sqrt{x^3} - 2x^5 - 5x^2$	$f(x) = -\frac{3}{2}x^{\frac{3}{2}} - 2x^5 - 5x^2$ $f'(x) = -\frac{3}{2} \cdot \frac{3}{2}x^{\frac{3}{2}-1} - 10x^4 - 10x$ $f'(x) = -\frac{9}{4}\sqrt{x} - 10x^4 - 10x$
20	$f(x) = \frac{\sqrt{x^3}\sqrt{x}}{2\sqrt{x}}$	$f(x) = \frac{\sqrt{x^3}\sqrt{x}}{2\sqrt{x}} = \frac{x^{\frac{3}{2}} \cdot x^{\frac{1}{2}}}{x^{\frac{1}{2}}} = \frac{x^{\frac{3}{2}+\frac{1}{2}}}{x^{\frac{1}{2}}} = \frac{x^2}{x^{\frac{1}{2}}}$ $f(x) = x^{2-\frac{1}{2}} = x^{\frac{3}{2}}$ $f'(x) = \frac{2}{2} \cdot x^{-\frac{4}{2}} = \frac{2}{2} \cdot x^{-2}$ $f'(x) = \frac{1}{x^2}$

21	$f(x) = \frac{2\sqrt{x} + \sqrt[3]{x}}{\sqrt{x}}$	$f(x) = \frac{2\sqrt{x} + \sqrt[3]{x}}{\sqrt{x}} = \frac{2\sqrt{x}}{\sqrt{x}} + \frac{\sqrt[3]{x}}{\sqrt{x}}$ $f(x) = \frac{2 \cdot x^{\frac{1}{2}}}{x^{\frac{1}{2}}} + \frac{x^{\frac{1}{3}}}{x^{\frac{1}{2}}}$ $f(x) = 2 + x^{-\frac{1}{6}}$ $f'(x) = -\frac{1}{6}x^{-\frac{7}{6}}$ $f'(x) = -\frac{1}{6x^{\frac{7}{6}}}$
22	$f(x) = (x^5 - x^3 + 3)^4$	$f'(x) = 4 \cdot (x^5 - x^3 + 3)^3 \cdot (5x^4 - 3x^2)$ ✓
23	$f(x) = (x^2 - 2)^2$	$f'(x) = 2 \cdot (x^2 - 2) \cdot (2x)$ $f'(x) = 4x \cdot (x^2 - 2)$ $f'(x) = 4x^3 - 8x$
24	$f(x) = (x - 1) \cdot (x + 1)^2$	$f'(x) = (x + 1)^2 + (x - 1) \cdot 2 \cdot (x + 1)$ $f'(x) = x^2 + 2x + 1 + 2x^2 - 2$ $f'(x) = 3x^2 + 2x - 1$
25	$f(x) = (x^5 - x^3 + 3)^4$	$f(x) = (x^5 - x^3 + 3)^4$ $f'(x) = 4 \cdot (x^5 - x^3 + 3)^3 \cdot (5x^4 - 3x^2)$ ✓

26	$f(x) = \sqrt{(x^5 - x^3 + 3)}$	$f(x) = (x^5 - x^3 + 3)^{\frac{1}{2}}$ $f'(x) = \frac{1}{2} (x^5 - x^3 + 3)^{-\frac{1}{2}} \cdot (5x^4 - 3x^2)$ $f'(x) = \frac{(5x^4 - 3x^2)}{2 \cdot \sqrt{x^5 - x^3 + 3}}$
27	$f(x) = \sqrt[5]{x^5 - x^3 + 3}$	$f(x) = (x^5 - x^3 + 3)^{\frac{1}{5}}$ $f'(x) = \frac{1}{5} (x^5 - x^3 + 3)^{-\frac{4}{5}} \cdot (5x^4 - 3x^2)$ $f'(x) = \frac{(5x^4 - 3x^2)}{5 \cdot \sqrt[5]{(x^5 - x^3 + 3)^4}}$
28	$f(x) = \frac{1}{\sqrt[5]{x^5 - x^3 + 3}}$	$f(x) = (x^5 - x^3 + 3)^{-\frac{1}{5}}$ $f'(x) = -\frac{1}{5} (x^5 - x^3 + 3)^{-\frac{6}{5}} \cdot (5x^4 - 3x^2)$ $f'(x) = -\frac{(5x^4 - 3x^2)}{5 \cdot \sqrt[5]{(x^5 - x^3 + 3)^6}} = -\frac{(5x^4 - 3x^2)}{5 \cdot (x^5 - x^3 + 3)^{\frac{6}{5}} \sqrt[5]{x^5 - x^3 + 3}}$

29	$f(x) = \sqrt[3]{\frac{x^5 - x^3 + 3}{x^2}}$	$f(x) = \left(\left(\frac{x^5 - x^3 + 3}{x^2} \right) \right)^{\frac{1}{3}}$ $f'(x) = \frac{1}{3 \sqrt[3]{\left(\frac{x^5 - x^3 + 3}{x^2} \right)^2}} \cdot \frac{(5 \cdot x^4 - 3x^2) \cdot x^2 - (x^5 - x^3 + 3) \cdot 2x}{x^4}$ $= \frac{1}{3 \sqrt[3]{\left(\frac{x^5 - x^3 + 3}{x^2} \right)^2}} \cdot \frac{(3 \cdot x^5 - x^3 - 6)}{x^3}$
30	$f(x) = \sqrt[5]{\frac{x^2 + x}{x + 1}}$	$f(x) = \sqrt[5]{\frac{x^2 + x}{x + 1}} = \sqrt[5]{\frac{x \cdot (x + 1)}{x + 1}} = \sqrt[5]{x}$ $f'(x) = \frac{1}{5 \sqrt[5]{x^4}}$
31	$f(x) = \sqrt{\frac{x^2 + 2x + 1}{x^2 - 1}}$	$f(x) = \sqrt{\frac{x^2 + 2x + 1}{x^2 - 1}} = \sqrt{\frac{(x + 1) \cdot (x + 1)}{(x + 1) \cdot (x - 1)}} = \sqrt{\frac{(x + 1)}{(x - 1)}}$ $f'(x) = \frac{1}{2 \sqrt{\frac{(x + 1)}{(x - 1)}}} \cdot \frac{x - 1 - x - 1}{(x - 1)^2} = - \frac{1}{\sqrt{\frac{(x + 1)}{(x - 1)}}} \cdot \frac{1}{(x - 1)^2} = - \frac{1}{\sqrt{x^2 - 1}}$ $\frac{1}{(x - 1)}$ $f'(x) = \frac{-1}{\sqrt{x^2 - 1} \cdot (x - 1)}$

32	$f(x) = \sqrt{\frac{x^2-1}{x^2-2x+1}}$	$f(x) = \sqrt{\frac{x^2-1}{x^2-2x+1}} = \sqrt{\frac{(x+1) \cdot (x-1)}{(x-1) \cdot (x-1)}} = \sqrt{\frac{(x+1)}{(x-1)}}$ $f'(x) = \frac{1}{2\sqrt{\frac{(x+1)}{(x-1)}}} \cdot \frac{x-1-x-1}{(x-1)^2} = -\frac{1}{\sqrt{\frac{(x+1)}{(x-1)}}} \cdot \frac{1}{(x-1)^2} = -\frac{1}{\sqrt{x^2-1}}$ $\frac{1}{(x-1)}$ $f'(x) = \frac{-1}{\sqrt{x^2-1} \cdot (x-1)}$
33	$f(x) = e^{x+1}$	$f'(x) = e^{x+1}$
34	$f(x) = -3 \cdot e^{x+1}$	$f'(x) = -3 \cdot e^{x+1}$
35	$f(x) = 7 \cdot e^{x^2+1}$	$f'(x) = 7 \cdot e^{x^2+1} \cdot 2x = 14x \cdot e^{x^2}$
36	$f(x) = -3 \cdot e^{x^2+x-1}$	$f'(x) = -3 \cdot (2x+1) e^{x^2+x-1}$
37	$f(x) = \sqrt{e^x}$	$f'(x) = \frac{e^x}{2\sqrt{e^x}}$
38	$f(x) = \sqrt{3e^{x+1}}$	$f'(x) = \frac{3e^{x+1}}{2\sqrt{3e^{x+1}}}$
39	$f(x) = -\frac{2}{\sqrt{e^x}}$	$f(x) = -2 \cdot (e^x)^{-\frac{1}{2}}$ $f'(x) = \frac{+2}{2} \cdot (e^x)^{-\frac{3}{2}} \cdot e^x$ $f'(x) = \frac{1}{\sqrt{e^x}}$
40	$f(x) = e^{x+1} - 3e^x + 2e^{x^3}$	$f'(x) = e^{x+1} - 3e^x + 6x^2 e^{x^3}$
41	$f(x) = 3^{2x+1}$	$f'(x) = 3^{2x+1} \cdot \ln 3 \cdot 2$
42	$f(x) = 7^{x-1}$	$f'(x) = 7^{x-1} \cdot \ln 7$

43	$f(x) = 7^{x^2-1}$	$f'(x) = 7^{x^2-1} \cdot \ln 7 \cdot 2x$
44	$f(x) = -\frac{1}{\sqrt{2^x}}$	$f(x) = -(2^x)^{-\frac{1}{2}}$ $f'(x) = \frac{1}{2} (2^x)^{-\frac{3}{2}} \ln 2 \cdot 2^x$ $f'(x) = \frac{\ln 2}{2\sqrt{2^x}}$
45	$f(x) = 2^{x+1} - 3 \cdot 5^x$	$f'(x) = 2^{x+1} \cdot \ln 2 - 3 \cdot (5^x \cdot \ln 5)$
46	$f(x) = (2^{x+1} - 3 \cdot 5^x)^3$	$f'(x) = 3 \cdot (2^{x+1} - 3 \cdot 5^x)^2 \cdot (2^{x+1} \cdot \ln 2 - 3 \cdot (5^x \cdot \ln 5))$
47	$f(x) = \sqrt{3^{x+1}}$	$f(x) = (3^{x+1})^{\frac{1}{2}}$ $f'(x) = \frac{1}{2} \cdot (3^{x+1})^{-\frac{1}{2}} \cdot 3^{x+1} \cdot \ln 3$ $f'(x) = \frac{3^{x+1} \ln 3}{2\sqrt{3^{x+1}}}$
48	$f(x) = 7^{\sqrt{x+1}}$	$f'(x) = 7^{\sqrt{x+1}} \cdot \ln 7 \cdot \frac{1}{2\sqrt{x+1}}$
49	$f(x) = \frac{e^{3x} + e^{x^2}}{3}$	$f'(x) = \frac{e^{3x} \cdot 3}{3} + \frac{e^{x^2} \cdot 2x}{3}$ $f'(x) = e^{3x} + \frac{e^{x^2} \cdot 2x}{3}$

50	$f(x) = \frac{7x^2}{x^3}$	$f'(x) = \frac{7x^2 \cdot \ln 7 \cdot 2x \cdot x^3 - 7x^2 \cdot 3x^2}{x^6}$ $f'(x) = \frac{7x^2 \cdot (\ln 7 \cdot 2x^2 - 3)}{x^4}$
51	$f(x) = \frac{e^{x^2}}{x^3}$	$f'(x) = \frac{e^{x^2} \cdot 2x \cdot x^3 - e^{x^2} \cdot 3x^2}{x^6} = \frac{x^2(e^{x^2} \cdot 2x^2 - e^{x^2} \cdot 3)}{x^6} =$ $\frac{(e^{x^2} \cdot 2x^2 - e^{x^2} \cdot 3)}{x^4}$ $f'(x) = \frac{e^{x^2} \cdot (2x^2 - 3)}{x^4}$
52	$f(x) = \sqrt{\frac{7x^2}{x^3}}$	$f'(x) = \frac{1}{2 \cdot \sqrt{\frac{7x^2}{x^3}}} \cdot \frac{7x^2 \cdot \ln 7 \cdot 2x \cdot x^3 - 7x^2 \cdot 3x^2}{x^6}$
53	$f(x) = \ln(x + 3)$	$f'(x) = \frac{1}{x+3}$
54	$f(x) = 7x + \ln(x - 3)$	$f'(x) = 7 + \frac{1}{x-3}$
55	$f(x) = \ln(x^2 - 3x + 2)$	$f'(x) = \frac{1}{x^2 - 3x + 2} \cdot (2x - 3)$
56	$f(x) = \frac{1}{\ln(x-1)}$	$f'(x) = \frac{-\frac{1}{(x-1)}}{(\ln(x-1))^2} = -\frac{1}{(x-1)((\ln(x-1))^2)}$

57	$f(x) = \ln \sqrt{\frac{x^2-1}{x^2-2x+1}}$	$f(x) = \ln \sqrt{\frac{x^2-1}{x^2-2x+1}} =$ $\ln \sqrt{\frac{(x-1) \cdot (x+1)}{(x-1) \cdot (x-1)}} = \ln \sqrt{\frac{(x+1)}{(x-1)}}$ $f'(x) = \frac{1}{\sqrt{\frac{(x+1)}{(x-1)}}} \cdot \frac{1}{2\sqrt{\frac{(x+1)}{(x-1)}}} \frac{x-1-x-1}{(x-1)^2} = ..$ $\frac{-2}{\frac{(x+1)}{(x-1)} \cdot 2 \cdot (x-1)^2} = -\frac{1}{x^2-1}$ $f'(x) = -\frac{1}{x^2-1}$
58	$f(x) = \ln \left(\sqrt{((x^5 - x^3 + 3))} \right)$	$f'(x) = \frac{1}{\sqrt{(x^5 - x^3 + 3)}} \cdot \frac{1}{2\sqrt{(x^5 - x^3 + 3)}} (5x^4 - 3x^2)$ $f'(x) = \frac{5x^4 - 3x^2}{(x^5 - x^3 + 3)}$
59	$f(x) = \ln \left(\frac{e^x - 1}{e^x + 1} \right)$	$f'(x) = \frac{1}{\frac{e^x - 1}{e^x + 1}} \cdot \frac{e^x \cdot (e^x + 1) - e^x \cdot (e^x - 1)}{(e^x + 1)^2}$ $f'(x) = \frac{+2e^x}{e^{2x} - 1}$
60	$f(x) = \log_3(x + 2)$	$f'(x) = \frac{u'}{u} \log_a e$ $f'(x) = \frac{1}{x + 2} \log_3 e$
61	$f(x) = \log(x - 3)^2$	$f'(x) = \frac{2 \cdot (x-3)}{(x-3)^2 \cdot \ln 10}$
62	$f(x) = \text{sen}(x + 1)$	$f'(x) = \cos(x + 1)$

63	$f(x) = \text{sen}(2x^3 + 2x^2)^2$	$f'(x) = 2 \cdot \sin(2x^3 + 2x^2) \cdot \cos(2x^3 + 2x^2) (6x^2 + 4x)$
64	$f(x) = \text{sen}(x + 1) + 5x$	$f'(x) = \cos(x + 1) + 5$
65	$f(x) = \sqrt{(\text{sen}(x + 1))}$	$f(x) = \sin(x + 1)^{\frac{1}{2}}$ $f'(x) = \frac{1}{2} \sin(x + 1)^{-\frac{1}{2}} \cdot \cos(x + 1)$ $f'(x) = \frac{\cos(x+1)}{2 \cdot \sqrt{\sin(x+1)}}$
66	$f(x) = \cos(3x + 3)$	$f'(x) = -\sin(3x + 3) \cdot 3$ $f'(x) = -3\sin(3x + 3)$
67	$f(x) = \cos(3x^2 + 3x)$	$f'(x) = -\sin(3x^2 + 3x) \cdot (6x + 3)$ $f'(x) = -3 \cdot \sin(3x^2 + 3x) \cdot (3x + 1)$
68	$f(x) = \frac{1}{\text{sen}(x+1)}$	$f'(x) = -\frac{\cos(x+1)}{(\text{sen}(x+1))^2}$
69	$f(x) = \frac{1}{\cos x} + \frac{1}{\text{sen}(x+1)}$	$f'(x) = \frac{\text{sen } x}{(\cos x)^2} - \frac{\cos(x+1)}{(\text{sen}(x+1))^2}$
70	$f(x) = \frac{1}{\text{sen } x} - \frac{1}{\cos(x-1)}$	$f'(x) = \frac{-\cos x}{(\text{sen } x)^2} - \frac{\text{sen}(x+1)}{(\cos(x-1))^2}$
71	$f(x) = \sqrt[3]{\cos(3x + 3)}$	$f'(x) = \frac{1}{\sqrt[3]{(\cos(3x+3))^2}} \cdot -\sin(3x + 3) \cdot 3$ $f'(x) = -\frac{\text{sen}(3x+3)}{\sqrt[3]{(\cos(3x+3))^2}}$

72	$f(x) = \frac{1}{\sin(x+1)} + (x^5 - x^3 + 3)^4$	$f'(x) = -\frac{\cos(x+1)}{(\sin(x+1))^2} + 4 \cdot (x^5 - x^3 + 3)^3 \cdot (5x^4 - 3x^2)$
73	$f(x) = \ln(x-1) + e^{x+1}$	$f'(x) = \frac{1}{x-1} + e^{x+1}$
74	$f(x) = e^{x-3} + \cos(x+1) \cdot x^2$	$f'(x) = e^{x-3} - \sin(x+1) \cdot 2x$
75	$f(x) = \tan(x-5)$	$f'(x) = \sec^2(x-5)$
76	$f(x) = \tan(x^3 + 3)$	$f'(x) = \sec^2(x^3 + 3) \cdot 3x^2$
77	$f(x) = -\tan(-5x^2 - 7)$	$f'(x) = -\sec^2(-5x^2 - 7) \cdot (-10x)$ $f'(x) = \sec^2(-5x^2 - 7) \cdot 10x$
78	$f(x) = \frac{1}{\tan(x-5)}$	$f'(x) = \frac{-\sec^2(x-5)}{(\tan(x-5))^2}$
79	$f(x) = -\frac{3}{\tan(x+2)}$	$f'(x) = \frac{3 \cdot \sec^2(x-5)}{(\tan(x+2))^2}$
80	$f(x) = \sqrt{(\tan(x-5))}$	$f'(x) = \frac{\sec^2(x-5)}{2 \cdot \sqrt{\tan(x-5)}}$
81	$f(x) = \arcsen(x^2 - 3)$	$f'(x) = \frac{2x}{\sqrt{1 - (x^2 - 3)^2}}$
82	$f(x) = 3x + \arcsen(3x^3 + 3x - 7)$	$f'(x) = 3 + \frac{9 \cdot x^2 + 3}{\sqrt{1 - (3x^3 + 3x - 7)^2}}$

83	$f(x)=\arcsen\sqrt{(x^2-3)}$	$f'(x) = \frac{\frac{1}{2\sqrt{x^2-3}} \cdot 2x}{\sqrt{1-(x^2-3)}}$ $= \frac{x}{\sqrt{(-x^2+4) \cdot (x^2-3)}}$
84	$f(x)=\arcsen\left(\frac{x+1}{x-1}\right)$	$f'(x) = \frac{1}{\sqrt{1-\left(\frac{x+1}{x-1}\right)^2}} \cdot \frac{x-1-(x+1)}{(x-1)^2}$ $f'(x) = \frac{1}{\frac{\sqrt{x^2-2x+1-x^2-2x-1}}{(x-1)}} \cdot \frac{-2}{(x-1)^2}$ $f'(x) = \frac{-2}{2 \cdot (x-1) \cdot \sqrt{-x}}$ $f'(x) = \frac{-1}{(x-1) \cdot \sqrt{-x}}$
85	$f(x)=\sqrt[3]{\sen(x^2+3)}$	$f(x)=\sqrt[3]{\sen(x^2+3)}=(\sen(x^2+3))^{\frac{1}{3}}$ $f'(x) = \frac{\cos(x^2+3) \cdot 2x}{3 \cdot \sqrt[3]{(\sen(x^2+3))^2}}$
86	$f(x)=\sqrt[3]{\tan e^x}$	$f'(x) = \frac{\sec^2(e^x) \cdot e^x}{3 \cdot \sqrt[3]{(\tan(e^x))^2}}$
87	$f(x)=x^2 \cdot \tan \sqrt{x}$	$f'(x) = 2x \cdot \tan \sqrt{x} + x^2 \cdot \sec^2 \sqrt{x} \cdot \frac{1}{2\sqrt{x}}$

88	$f(x) = \frac{1 + \operatorname{sen}^2 x}{x}$	$f'(x) = \frac{-2 \cdot \operatorname{sen} x \cdot \cos x}{x^2}$
89	$f(x) = \ln(\operatorname{sen} x)$	$f'(x) = \frac{1}{\operatorname{sen} x} \cdot \cos x$
90	$f(x) = \operatorname{arctg}(x^2 - 3)$	$f'(x) = \frac{1}{1 + (x^2 - 3)^2} \cdot 2x$
91	$f(x) = e^{x^2} - 3 \ln(\sin x)$	$f'(x) = e^{x^2} \cdot 2x - 3 \frac{1}{(\sin x)} \cdot \cos x$
92	$f(x) = e^{x+3} + \ln(x-5) - \cot(x)$	$f'(x) = e^{x+3} + \frac{1}{x-5} + \operatorname{cosec}^2(x)$
93	$f(x) = \operatorname{arctg}(\ln x)$	$f'(x) = \frac{1}{1 + (\ln x)^2} \cdot \frac{1}{x}$
94	$f(x) = \ln(\ln x)$	$f'(x) = \frac{1}{\ln x} \cdot \frac{1}{x}$
95	$f(x) = \ln(\ln x) + \operatorname{arctg}(x^3 - 1)$	$f'(x) = \frac{1}{\ln x} \cdot \frac{1}{x} + \frac{1}{1 + (x^3 - 1)^2} \cdot 3x^2$
96	$f(x) = \cot(x^3 - 1)$	$f'(x) = -3 \cdot x^2 \cdot \operatorname{cosec}^2(x^3 - 1)$
97	$f(x) = \sec x - e^x$	$f'(x) = \sec x \cdot \operatorname{tg} x - e^x$
98	$f(x) = \operatorname{cosec} x + \frac{x^3}{3}$	$f'(x) = -\operatorname{cosec} x \cdot \operatorname{tg} x + x^2$
99	$f(x) = \cot(x+1)$	$f'(x) = -\operatorname{cosec}^2(x+1)$
100	$f(x) = e^{x^2} - \cot(x^3 - 1)$	$f'(x) = e^{x^2} \cdot 2x + 3 \cdot x^2 \cdot \operatorname{cosec}^2(x^3 - 1)$

Si tienes cualquier duda y quieres ponerte en contacto conmigo, puedes hacerlo escribiéndome a yosoytuprofe.miguel@gmail.com, o bien a través de mis perfiles en redes sociales ([Facebook](#), [Twitter](#), [Instagram](#) o [YouTube](#)).

Nos vemos en la siguiente clase.

