

EJERCICIOS DE DERIVADAS

FUNCIÓN

DERIVADA

1.-	$y=3$	$y'=0$
2.-	$y=x+5$	$y'=1$
3.-	$y=x^7$	$y'=7x^6$
4.-	$y=x^6-x^3$	$y'=6x^5-3x^2$
5.-	$y=2x^4$	$y'=8x^3$
6.-	$y=ax+b$	$y'=a$
7.-	$y=5x-2$	$y'=5$
8.-	$y=a^5$	$y'=0$
9.-	$y=ax^2+bx+c$	$y'=2ax+b$
10.-	$y=x(x-1)$	$y'=2x-1$
11.-	$y=(x+1)(x-1)$	$y'=2x$
12.-	$y=ax^3+bx^2+cx+d$	$y'=3ax^2+2bx+c$
13.-	$y=x^3-x^2+4x-5$	$y'=3x^2-2x+4$
14.-	$y=x^4-4x^3+5x^2$	$y'=4x^3-12x^2+10x$
15.-	$y=2x^3+3x^2-6x+5$	$y'=6x^2+6x-6$
16.-	$y=(x+1)(x^2-x+3)$	$y'=3x^2+2$
17.-	$y=x(x-1)^2$	$y'=3x^2-4x+1$
18.-	$y=a(x-1)^2$	$y'=2a(x-1)$
19.-	$y=a(a-1)^2$	$y'=0$
20.-	$y=x^{-2}$	$y'=\frac{-2}{x^3}$
21.-	$y=\frac{1}{x+1}$	$y'=\frac{-1}{(x+1)^2}$
22.-	$y=\frac{x^2-3}{x^3+x}$	$y'=\frac{-x^4+10x^2+3}{(x^3+x)^2}$
23.-	$y=\frac{x+1}{x}$	$y'=\frac{-1}{x^2}$
24.-	$y=\frac{x(x+1)(x-1)}{3x^2-3}$	$y'=\frac{3x^4-6x^2+3}{(3x^2-3)^2}$
25.-	$y=\frac{x(x+2)^2}{x^2+4x+4}$	$y'=1$
26.-	$y=\sqrt{3x-2}$	$y'=\frac{3}{2\sqrt{3x-2}}$

- 27.- $y = \sqrt{2x-1}$ $y' = \frac{1}{\sqrt{2x-1}}$
- 28.- $y = \sqrt{x^2+1}$ $y' = \frac{x}{\sqrt{x^2+1}}$
- 29.- $y = \sqrt{\frac{1-x}{1+x}}$ $y' = \frac{-1}{(1+x)^2 \sqrt{\frac{1-x}{1+x}}}$
- 30.- $y = \frac{1-x}{\sqrt{1-x^2}}$ $y' = \frac{1}{(-1-x)\sqrt{1-x^2}}$
- 31.- $y = e^{4x}$ $y' = 4e^{4x}$
- 32.- $y = 5^{2x}$ $y' = 2 \cdot 5^{2x} \cdot \ln 5$
- 33.- $y = e^{3-x^2}$ $y' = -2x e^{3-x^2}$
- 34.- $y = \frac{e^x + e^{-x}}{2}$ $y' = \frac{e^x - e^{-x}}{2}$
- 35.- $y = x^3 \cdot 2^x \cdot e^x$ $y' = x^2 \cdot 2^x \cdot e^x (3 + x \ln 2 + x)$
- 36.- $y = \frac{e^x - e^{-x}}{e^x + e^{-x}}$ $y' = \frac{4}{(e^x + e^{-x})^2}$
- 37.- $y = a^{x^2+x+1}$ $y' = (2x+1) \cdot a^{x^2+x+1} \cdot \ln a$
- 38.- $y = \ln(x^2+1)$ $y' = \frac{2x}{x^2+1}$
- 39.- $y = \ln(ax^2+bx+c)$ $y' = \frac{2ax+b}{ax^2+bx+c}$
- 40.- $y = \ln^5 3x$ $y' = \frac{5 \ln^4 3x}{x}$
- 41.- $y = x^5 \ln x$ $y' = x^4 (5 \ln x + 1)$
- 42.- $y = x^2 \ln(2-x)$ $y' = x \left(2 \ln(2-x) - \frac{x}{2-x} \right)$
- 43.- $y = \frac{\ln x}{x}$ $y' = \frac{1 - \ln x}{x^2}$
- 44.- $y = \lg_3(1+x^2)$ $y' = \frac{2x}{1+x^2} \log_3 e$
- 45.- $y = \ln(x-5)$ $y' = \frac{1}{x-5}$
- 46.- $y = \lg_a(3x^2+5)$ $y' = \frac{6x}{3x^2+5} \lg_a e$
- 47.- $y = x \cdot \ln x - x$ $y' = \ln x$
- 48.- $y = \ln \sqrt{1+x^2}$ $y' = \frac{x}{1+x^2}$

- 49.- $y = \ln \sqrt{\frac{1-x}{1+x}}$ $y' = \frac{-1}{1-x^2}$
- 50.- $y = \ln \frac{x^2+1}{x^2-1}$ $y' = \frac{-4x}{x^4-1}$
- 51.- $y = \operatorname{sen} 2x$ $y' = 2 \cos x$
- 52.- $y = \cos(2x+1)$ $y' = -2 \operatorname{sen}(2x+1)$
- 53.- $y = \operatorname{tg}(x^2+x+1)$ $y' = (2x+1) \sec^2(x^2+x+1)$
- 54.- $y = \operatorname{tg} \sqrt{x}$ $y' = \frac{1}{2\sqrt{x}} \sec^2 \sqrt{x}$
- 55.- $y = \sec(3x^2+4x-1)$ $y' = (6x+4) \sec(3x^2+4x-1) \operatorname{tg}(3x^2+4x-1)$
- 56.- $y = \operatorname{cosec} \frac{x}{a}$ $y' = \frac{-1}{a} \operatorname{cosec} \frac{x}{a} \operatorname{ctg} \frac{x}{a}$
- 57.- $y = \sqrt{\operatorname{sen} 3x}$ $y' = \frac{3 \cos 3x}{2\sqrt{\operatorname{sen} 3x}}$
- 58.- $y = \operatorname{sen}^{2/3} x$ $y' = \frac{2}{3} \operatorname{sen}^{-1/3} x \cdot \cos x = \frac{2 \cos x}{3\sqrt[3]{\operatorname{sen} x}}$
- 59.- $y = x \cos x$ $y' = \cos x - x \operatorname{sen} x$
- 60.- $y = \ln \operatorname{sen} x$ $y' = \operatorname{ctg} x$
- 61.- $y = \operatorname{sen} x \cdot \cos 2x$ $y' = \cos x \cdot \cos 2x - 2 \operatorname{sen} x \cdot \operatorname{sen} 2x$
- 62.- $y = e^x \operatorname{tg} x$ $y' = e^x (\operatorname{tg} x + \sec^2 x) = e^x (\operatorname{tg}^2 x + \operatorname{tg} x + 1)$
- 63.- $y = \operatorname{arc sen} 2x$ $y' = \frac{2}{\sqrt{1-4x^2}}$
- 64.- $y = \operatorname{arc sen} \sqrt{x}$ $y' = \frac{1}{2\sqrt{1-x}\sqrt{x}} = \frac{1}{2\sqrt{x-x^2}}$
- 65.- $y = \arccos(x^2+1)$ $y' = \frac{-2x}{\sqrt{1-(x^2+1)^2}}$
- 66.- $y = \frac{1}{3} \operatorname{tg}^3 x - \operatorname{tg} x + x$ $y' = \operatorname{tg}^2 x \cdot \sec^2 x - \sec^2 x + 1$
- 67.- $y = \operatorname{arctg} \frac{1+x}{1-x}$ $y' = \frac{1}{1+x^2}$
- 68.- $y = \left(\frac{1-\operatorname{sen} x}{1+\operatorname{sen} x} \right)^2$ $y' = \frac{-4(1-\operatorname{sen} x) \cos x}{(1+\operatorname{sen} x)^3}$
- 69.- $y = \ln \operatorname{tg} x$ $y' = \frac{1}{\operatorname{sen} x \cos x}$
- 70.- $y = \ln \sqrt{\frac{1+\cos x}{1-\cos x}}$ $y' = -\operatorname{cosec} x$
- 71.- $y = \ln \sqrt{\operatorname{sen} x}$ $y' = \operatorname{ctg} 2x$

- 72.- $y = \operatorname{arcsec} x^2$ $y' = \frac{2}{x \sqrt{x^4 - 1}}$
- 73.- $y = \operatorname{arcctg}(2x + 1)$ $y' = \frac{-2}{(2x+1)^2 + 1}$
- 74.- $y = \operatorname{sen}(\operatorname{sen} 2x)$ $y' = 2 \cos 2x \cdot \cos(\operatorname{sen} 2x)$
- 75.- $y = \operatorname{sen}(\ln(3x+5))$ $y' = \frac{3}{3x+5} \cos(\ln(3x+5))$
- 76.- $y = \operatorname{arcsen}(\cos x - x)$ $y' = \frac{-\operatorname{sen} x - 1}{\sqrt{1 - (\cos x - x)^2}}$
- 77.- $y = \ln(x + \ln x)$ $y' = \frac{x+1}{x^2 + x \ln x}$
- 78.- $y = \operatorname{arcsen}\left(\frac{1}{1+x^2}\right)$ $y' = \frac{-2}{(1+x^2)\sqrt{x^2+2}}$
- 79.- $y = \lg\left(\frac{\lg x}{x}\right)$ $y' = \frac{\log e - \log x}{x \log x} \log e$
- 80.- $y = \ln^{1/2} \operatorname{sen} 2x$ $y' = \frac{\operatorname{ctg} 2x}{\sqrt{\ln \operatorname{sen} 2x}}$
- 81.- $y = x^2 \cos 3x$ $y' = 2x \cos 3x - 3x^2 \operatorname{sen} 3x$
- 82.- $y = x^{x+1}$ $y' = \left[\ln x + \frac{x+1}{x} \right] x^{x+1}$
- 83.- $y = \left(1 + \frac{1}{x}\right)^x$ $y' = \left[\ln \frac{x+1}{x} - \frac{1}{x-1} \right] \left(1 + \frac{1}{x}\right)^x$
- 84.- $y = (x^5)^{x^2+1}$ $y' = \left[10x \ln x + \frac{5x^2+5}{x} \right] (x^5)^{x^2+1}$
- 85.- $y = x^{e^x}$ $y' = \left[e^x \ln x + \frac{e^x}{x} \right] x^{e^x}$
- 86.- $y = (3x+1)^{2x+3}$ $y' = \left[2 \ln(3x+1) + \frac{6x+9}{3x+1} \right] (3x+1)^{2x+3}$
- 87.- $y = (\operatorname{sen} x)^x$ $y' = [\ln(\operatorname{sen} x) + x \operatorname{ctgx}] (\operatorname{sen} x)^x$
- 88.- $y = x^{\operatorname{sen}(2x-9)}$ $y' = \left[2 \cos(2x-9) \ln x + \frac{\operatorname{sen}(2x-9)}{x} \right] x^{\operatorname{sen}(2x-9)}$
- 89.- $y = (\operatorname{sen} x)^{\cos x}$ $y' = [-\operatorname{sen} x \ln(\operatorname{sen} x) + \cos x \operatorname{ctgx}] (\operatorname{sen} x)^{\cos x}$
- 90.- $y = (\ln x)^{\ln x}$ $y' = \frac{1}{x} [\ln(\ln x) + 1] (\ln x)^{\ln x}$
- 91.- $y = (x^2 - 1)^{\operatorname{sen} x}$ $y' = \left[\cos x \ln(x^2 - 1) + \frac{2x \operatorname{sen} x}{x^2 - 1} \right] (x^2 - 1)^{\operatorname{sen} x}$