

CÁLCULO DE DERIVADAS

1. Calcula la derivada de las siguientes funciones:

1. $y = 3x^5 - 4x^3 - 4$	2. $y = x + \ln x$	3. $y = 2x^2 - e^2$	4. $y = xe^x$	5. $y = x\sqrt{x}$	6. $y = \frac{x+2}{x-2}$
7. $y = \frac{\ln x}{e^x}$	8. $y = e^{2x} + \frac{2}{x}$	9. $y = (2x+1)^3$	10. $y = 2^{2x}$	11. $y = e^{2-3x}$	12. $y = (2x-1)e^{2x-1}$
13. $y = \sqrt{2x-1}$	14. $y = \ln(x^2-2)$	15. $y = x^2(2x-1)^3$	16. $y = \frac{e^x}{x+1}$	17. $y = \frac{x^2-1}{\sqrt{x-1}}$	18. $y = \ln \frac{x^2}{x+1}$

2. Calcula la derivada de las siguientes funciones:

1. $f(x) = \frac{e^{5x}}{x^3-1}$	2. $f(x) = 4x \cdot \ln(3x+1)$	3. $f(x) = (x^2-1)(x^3+2x)$	4. $f(x) = \frac{e^{2x+1}}{(x-1)^2}$
5. $f(x) = \ln \frac{x}{x+1}$	6. $f(x) = \frac{3x-1}{x} - (5x-x^2)^2$	7. $f(x) = (x^2-1) \cdot \ln x$	8. $f(x) = 2^{5x}$
9. $f(x) = (x^3-6x)(x^2+1)^3$	10. $f(x) = (x+1)e^{2x+1}$	11. $f(x) = \frac{\ln x}{x^2}$	12. $f(x) = (1-x^3)\cos x$

1. Dada la siguiente función, calcular, por la definición, la derivada que se indica:

1. $f(x) = x+5$; $f'(2)$	2. $f(x) = x^2-3x+2$; $f'(1)$	3. $f(x) = \sin 2x$; $f'(0)$	4. $f(x) = \frac{x+1}{x-2}$; $f'(1)$
5. $f(x) = \begin{cases} x, & x < 1 \\ x^2, & x \geq 1 \end{cases}$; $f'(1)$	6. $f(x) = \begin{cases} x^2, & x < 0 \\ x^3, & x \geq 0 \end{cases}$; $f'(0)$		

2. Calcular la derivada de la función:

1. $y = x^2+2x+1$	2. $y = 2x(x-1)^2$	3. $y = \frac{x+1}{x-2}$	4. $y = \sqrt{x^2+1}$	5. $y = \sqrt{(x^2+1)^3}$
6. $y = \sqrt[3]{2x+1}$	7. $y = \ln(x^2+1)$	8. $y = \ln(x^2+1)^3$	9. $y = \sqrt{\ln x^2}$	10. $y = x^2 \ln^2 x$
11. $y = \frac{\ln(x+1)}{\ln(x+2)}$	12. $y = e^{2\sqrt{x}}$	13. $y = 2^{2x}$	14. $y = \sqrt{2^{2x+1}}$	15. $y = \frac{\ln x}{e^x}$
16. $y = \sin(x^2+2)$	17. $y = \sqrt{\sin x}$	18. $y = \sin^2 3x$	19. $y = \sin \frac{x}{x-2}$	20. $y = \frac{\sin x}{\sqrt{x}}$
21. $y = \sin 2x \cdot \cos 3x$	22. $y = \operatorname{ctg}(x+1)^2$	23. $y = \cos \ln 2x$	24. $y = \ln \sqrt{\cos x}$	
25. $y = 2^{x \cdot \cos 2x}$	26. $y = \operatorname{tg} 2^{\ln x}$	27. $y = \arccos e^x$	28. $y = \operatorname{arcsen} \sqrt{2x}$	
29. $y = \operatorname{arctg} \sqrt{x}$	30. $y = (x+1)^{\ln x}$			

3. Calcular la segunda derivada de la función:

1. $y = 2x+3$	2. $y = e^{2x}$	3. $y = \ln 2x$
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