

Calcular las derivadas de las siguientes funciones:

- $y = x^3 - \frac{1}{2}x^2 + 2x - 12$
- $y = (ax + b)^2$, donde a y b son constantes.
- $y = (x^2 + 3)(2x^2 + x + 1)$
- $y = \frac{2x - 3}{3x + 5}$
- $y = \sqrt{x^2 + 5}$
- $y = \sqrt[3]{x^2 - 1}$
- $y = \sqrt[5]{x^2 - 7x}$
- $y = \frac{x^2 - 5x}{x^3 - 1}$
- $y = \sqrt{x^2 - 4x + 5}$
- $y = \sqrt{\frac{x + 3}{x - 1}}$
- $y = \frac{x^3 - 12x + 2}{x^2 - 7}$
- $y = \sqrt{\frac{2x + 3}{x - 2}}$
- $y = \frac{\sqrt{x} - 1}{\sqrt{x} + 1}$
- $y = \left(\frac{x^3 - 1}{2x^3 + 1}\right)^4$
- $y = (x - 1)\sqrt{x^2 - 2x + 2}$
- $y = \sqrt{1 + \sqrt{x}}$
- $y = 2x^2\sqrt{2 - x}$
- $y = \sqrt{2x} + 2\sqrt{x}$
- $y = x\sqrt{3x^2 - 1}$
- $y = \frac{2x}{\sqrt{x - 1}}$
- $y = \sqrt{\ln x}$
- $y = \ln \sqrt[4]{x^3}$
- $y = \ln \frac{2 - x}{2 + x}$
- $y = \ln(x\sqrt{1 + x^2})$
- $y = \frac{\ln x}{e^x}$
- $y = \ln \sqrt{x(x - 1)}$
- $y = \ln(x + \sqrt{x^2 - 1})$
- $y = \ln \frac{e^x}{e^x - 1}$
- $y = e^{2x} \ln x^2$
- $y = \ln \frac{(x - 2)^3}{\sqrt{2x - 1}}$
- $y = x^3 e^{-3x}$
- $y = \ln \frac{e^x - 1}{e^x + 1}$
- $y = \ln \sqrt{\frac{1 - x}{1 + x}}$
- $y = (x^2 - 2x + 2)e^x$
- $y = x^3 \ln x - \frac{x^3}{3}$
- $y = (a + x)\sqrt{a - x}$, donde a es una constante.
- $y = \ln \frac{\sqrt{1 + e^x} - 1}{\sqrt{1 + e^x} + 1}$
- $y = x - 2\sqrt{x} + 2 \ln(1 + \sqrt{x})$
- $y = 5 \ln^3(ax + b)$, donde a y b son constantes.
- $y = \sqrt[3]{a + bx^3}$, donde a y b son constantes.
- $y = \sqrt{xe^x + x}$
- $y = x^2 \cdot e^{2x}$

Soluciones

1. $y' = 3x^2 - x + 2$

2. $y' = 2a(ax + b) = 2a^2x + 2ab$

3. $y' = 8x^3 + 3x^2 + 14x + 3$

4. $y' = \frac{19}{(3x+5)^2}$

5. $y' = \frac{x}{\sqrt{x^2+5}}$

6. $y' = \frac{2x}{3\sqrt[3]{(x^2-1)^2}}$

7. $y' = \frac{2x-7}{5\sqrt[5]{(x^2-7x)^2}}$

8. $y' = \frac{-x^4+10x^3-2x+5}{(x^3-1)^2}$

9. $y' = \frac{x-2}{\sqrt{x^2-4x+5}}$

10. $y' = \frac{-2}{(x-1)\sqrt{x^2+2x-3}}$

11. $y' = \frac{x^4-9x^2-4x+84}{(x^2-7)^2}$

12. $y' = \frac{-7}{2(x-2)\sqrt{2x^2-x-6}}$

13. $y' = \frac{1}{\sqrt{x}(\sqrt{x}+1)^2}$

14. $y' = \frac{36x^2(x^3-1)^3}{(2x^3+1)^5}$

15. $y' = \frac{2x^2-4x+3}{\sqrt{x^2+2x+2}}$

16. $y' = \frac{1}{4\sqrt{x+x\sqrt{x}}}$

17. $y' = \frac{-5x^2+8x}{\sqrt{2-x}}$

18. $y' = \frac{1+\sqrt{2}}{\sqrt{2x}}$

19. $y' = \frac{6x^2-1}{\sqrt{3x^2-1}}$

20. $y' = \frac{x-2}{(x-1)\sqrt{x-1}}$

21. $y' = \frac{1}{2x\sqrt{\ln x}}$

22. $y' = \frac{3}{4x}$

23. $y' = \frac{4}{x^2-4}$

24. $y' = \frac{2x^2+1}{x(1+x^2)}$

25. $y' = \frac{1-x \ln x}{xe^x}$

26. $y' = \frac{2x-1}{2x(x-1)}$

27. $y' = \frac{1}{\sqrt{x^2-1}}$

28. $y' = \frac{1}{1-e^x}$

29. $y' = \frac{4xe^{2x} \ln x + 2e^{2x}}{x}$

30. $y' = \frac{5x-1}{(x-2)(2x+1)}$

31. $y' = 3x^2e^{-3x}(1-x)$

32. $y' = \frac{2e^x}{e^{2x}-1}$

33. $y' = \frac{1}{x^2-1}$

34. $y' = x^2e^x$

35. $y' = 3x^2 \ln x$

36. $y' = \frac{a-3x}{2\sqrt{a-x}}$

37. $y' = \frac{1}{\sqrt{e^x+1}}$

38. $y' = \frac{\sqrt{x}}{\sqrt{x}+1}$

39. $y' = \frac{15a \ln^2(ax+b)}{ax+b}$

40. $y' = \frac{bx^2}{\sqrt[3]{(a+bx^3)^2}}$

41. $y' = \frac{e^x + xe^x + 1}{2\sqrt{xe^x + x}}$

42. $y' = 2xe^{2x}(1+x)$