

Reglas de derivación:

En esta tabla: k, n representan números; u, v representan funciones de x .

Función	Derivada	Ejemplo	Derivada del ejemplo
$f(x) = k$	$f'(x) = 0$	$f(x) = 6$	$f'(x) = 0$
		$f(x) = -\frac{7}{5}$	$f'(x) = 0$
$f(x) = x$	$f'(x) = 1$	$f(x) = x$	$f'(x) = 1$
$f(x) = k \cdot u$	$f'(x) = k \cdot u'$	$f(x) = 4x$	$f'(x) = 4 \cdot (x)' = 4 \cdot 1 = 4$
		$f(x) = \frac{8x}{3}$	$f'(x) = \frac{8}{3} \cdot (x)' = \frac{8}{3} \cdot 1 = \frac{8}{3}$
$f(x) = x^n$	$f'(x) = n \cdot x^{n-1}$	$f(x) = x^2$	$f'(x) = 2 \cdot x^{2-1} = 2 \cdot x^1 = 2x$
		$f(x) = x^3$	$f'(x) = 3 \cdot x^{3-1} = 3x^2$
		$f(x) = x^5$	$f'(x) = 5 \cdot x^{5-1} = 5x^4$
$f(x) = u + v$	$f'(x) = u' + v'$	$f(x) = x + 7$	$f'(x) = (x)' + (7)' = 1 + 0 = 1$
		$f(x) = 4x + 5$	$f'(x) = (4x)' + (5)' = 4 \cdot 1 + 0 = 4$
		$f(x) = x^2 + 9$	$f'(x) = (x^2)' + (9)' = 2x + 0 = 2x$
$f(x) = u - v$	$f'(x) = u' - v'$	$f(x) = 5x - 3$	$f'(x) = (5x)' - (3)' = 5 \cdot 1 - 0 = 5$
		$f(x) = x^2 - x$	$f'(x) = (x^2)' - (x)' = 2x - 1$
		$f(x) = x^2 - 2x + 3$	$f'(x) = (x^2)' - (2x)' + (3)' = 2x - 2$
$f(x) = u^n$	$f'(x) = n \cdot u^{n-1} \cdot u'$	$f(x) = (x + 7)^2$	$f'(x) = 2 \cdot (x + 7)^{2-1} \cdot (x + 7)' =$ $= 2(x + 7)^1 \cdot 1 = 2(x + 7)$
		$f(x) = (2x - 1)^3$	$f'(x) = 3 \cdot (2x - 1)^{3-1} \cdot (2x - 1)' =$ $= 3(2x - 1)^2 \cdot 2 = 6(2x - 1)^2$
$f(x) = u \cdot v$	$f'(x) = u' \cdot v + u \cdot v'$	$f(x) = x^2 \cdot (x - 2)$	$f'(x) = (x^2)' \cdot (x - 2) + x^2 \cdot (x - 2)' =$ $= 2x \cdot (x - 2) + x^2 \cdot (1 - 0) =$ $= 2x^2 - 4x + x^2 = 3x^2 - 4x$
		$f(x) = x^3 \cdot (x + 1)$	$f'(x) = (x^3)' \cdot (x + 1) + x^3 \cdot (x + 1)' =$ $= 3x^2 \cdot (x + 1) + x^3 \cdot (1 + 0) =$ $= 3x^3 + 3x^2 + x^3 = 4x^3 + 3x^2$
$f(x) = \frac{u}{v}$	$f'(x) = \frac{u' \cdot v - u \cdot v'}{v^2}$	$f(x) = \frac{3}{x}$	$f'(x) = \frac{(3)' \cdot x - 3 \cdot (x)'}{x^2} = \frac{0 \cdot x - 3 \cdot 1}{x^2} = \frac{-3}{x^2}$
		$f(x) = \frac{x}{x-1}$	$f'(x) = \frac{(x)' \cdot (x-1) - x \cdot (x-1)'}{(x-1)^2} =$ $= \frac{1 \cdot (x-1) - x \cdot 1}{(x-1)^2} = \frac{x-1-x}{(x-1)^2} =$ $= \frac{-1}{(x-1)^2} = -\frac{1}{(x-1)^2}$

Deriva estas funciones:

1. $f(x) = \frac{3x}{5} - \frac{8}{7}$

2. $f(x) = 6x + 9500$

3. $f(x) = -3x^2 + 18$

4. $f(x) = 5x^2 + x$

5. $f(x) = 4x^2 - 3x + 8$

6. $f(x) = 7x^2 - 6x$

7. $f(x) = 78(5x^2 - 3x - 4)$

8. $f(x) = \frac{4x^2 - 1}{5}$

9. $f(x) = -x^3 + 3x^2 - 2x + 7$

10. $f(x) = 2x^3 - 5x^2 + 6x - 9$

11. $f(x) = (2x - 5)^4$

12. $f(x) = (x^2 + 1)^3$

13. $f(x) = 19(x - 4)^2$

14. $f(x) = \frac{(x^2 + 1)^2}{8}$

15. $f(x) = (3x + 5)^2 - (3x - 5)^2$

16. $f(x) = (5 - 2x) \cdot (3x + 1)^2$

17. $f(x) = \frac{x}{2x - 1}$

18. $f(x) = \frac{x - 2}{x + 2}$

19. $f(x) = \frac{x^2}{x - 1}$

20. $f(x) = \frac{3x - 2}{x^2}$

21. $f(x) = \frac{745x}{x^2 - 1}$

22. $f(x) = -\frac{4}{x^2}$

23. $f(x) = \frac{(x - 1)^2}{x^2 + 4}$

24. $f(x) = \frac{6x - 4}{(x - 2)^2}$

Soluciones:

1. $f'(x) = \frac{3}{5}$

2. $f'(x) = 6$

3. $f'(x) = -6x$

4. $f'(x) = 10x + 1$

5. $f'(x) = 8x - 3$

6. $f'(x) = 14x - 6$

7. $f'(x) = 78(10x - 3)$

8. $f'(x) = \frac{1}{5} \cdot 8x = \frac{8}{5} \cdot x$

9. $f'(x) = -3x^2 + 6x - 2$

10. $f'(x) = 6x^2 - 10x + 6$

11. $f'(x) = 4 \cdot (2x - 5)^3 \cdot 2 = 8(2x - 5)^3$

12. $f'(x) = 3(x^2 + 1)^2 \cdot 2x = 6x(x^2 + 1)^2$

13. $f'(x) = 19 \cdot 2(x - 4) \cdot 1 = 38(x - 4)$

14. $f'(x) = \frac{1}{8} \cdot 2(x^2 + 1) \cdot 2x = \frac{1}{2} \cdot x(x^2 + 1)$

15. $f'(x) = 2 \cdot (3x + 5) \cdot 3 - 2 \cdot (3x - 5) \cdot 3 = 60$

16. $f'(x) = -2(3x + 1)^2 + 6(5 - 2x)(3x + 1)$

17. $f'(x) = -\frac{1}{(2x - 1)^2}$

18. $f'(x) = \frac{4}{(x + 2)^2}$

19. $f'(x) = \frac{x^2 - 2x}{(x - 1)^2}$

20. $f'(x) = \frac{-3x^2 + 4x}{x^4} = \frac{-3x + 4}{x^3}$

21. $f'(x) = -745 \frac{x^2 + 1}{(x^2 - 1)^2}$

22. $f'(x) = \frac{8}{x^3}$

23. $f'(x) = \frac{2(x - 1)(x + 4)}{(x^2 + 4)^2}$

24. $f'(x) = \frac{-6x - 4}{(x - 2)^3} = -2 \cdot \frac{3x + 2}{(x - 2)^3}$