

# DERIVADAS...

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

$$f'(x) = 2 \times 3x^{2-1} - 5$$

$$f'(x) = 6x - 1$$

2.  $g(t) = t - 3t^2 - 2t^4$

$$g'(t) = 1 - 2 \times 3t^{2-1} - 4 \times 2t^{4-1}$$

$$g'(t) = 1 - 6t - 8t^3$$

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

$$f'(x) = (2)(3x - 2) + (2x + 3)(3)$$

$$f'(x) = 6x - 4 + 6x + 9$$

4.  $g(x) = (2x^2 - 1)(x^3 + 2)$

$$g'(x) = (4x)(x^3 + 2) + (2x^2 - 1)(3x^2)$$

5.  $h(x) = (x + 1)^3$

$$h'(x) = 2(x + 1) \times 1$$

$$h'(x) = 2(x + 1)$$

6.  $g(t) = (4t - 7)^2$

$$g'(t) = 2(4t - 7) \times (4)$$

$$g'(t) = (8t - 14) \times (4)$$

7.  $f(y) = y(2y - 1)(2y + 1)$

$$f'(y) = (2y^2 - y)(2y^2 + y)$$

$$f'(y) = (4y - 1)(2y^2 + y) + (2y^2 + y)(4y + 1)$$

8.  $f(x) = 4x^9 - \frac{1}{2x}$

$$f'(x) = 16x^8 - \frac{x^2 - 1x \cdot 2x}{(x^2)^2}$$

$$f'(x) = 16x^8 - \frac{-2x}{x^4}$$

9.  $g(x) = \frac{1}{x+1} - \frac{1}{x-1}$

$$g'(x) = 0(x+1) - (1)(1+0) - 0(x-1) - 1(1-0)$$

$$g'(x) = \frac{-1}{(x+1)^2} + \frac{1}{(x-1)^2}$$

$$10. f(t) = \frac{1}{4-t^2}$$

$$f'(t) = \frac{0(4-t^2) - 1(0-2t)}{(4-t^2)^2}$$

$$11. h(x) = \frac{3}{x^2+x+1}$$

$$h'(x) = \frac{0(x^2+x+1) - 3(2x+1+0)}{(x^2+x+1)^2}$$

$$12. f(x) = \frac{1}{1-\frac{x}{2}}$$

$$f'(x) = \frac{0(1-\frac{x}{2}) - (1) \cdot 0 - \frac{0(x) - 2(1)}{(x)^2}}{(1-\frac{x}{2})^2}$$

$$13. g(t) = (t^2+1)(t^3+t^2+1)$$

$$g'(t) = (2t) \cdot (t^3+t^2+1) + (t^2+1)(3t^2+2t+0)$$

$$g'(t) = (2t)(t^3+t^2+1) + (t^2+1)(3t^2+2t)$$

$$14. (2x^3-3)(17x^4-6x+2)$$

$$(6x^2)(17x^4-6x+2) + (2x^3-3)(68x^3-6+0)$$

$$15. g(z) = \frac{1}{2z} - \frac{1}{3z^2}$$

$$g'(z) = \left[ \frac{2z}{9z^3} \right] = \frac{2}{3z^3} - z^2$$

$$g'(z) = z^2 - \frac{1}{3z^3}$$

$$16. f(x) = \frac{2x^3 - 3x^2 + 4x - 5}{x^2}$$

$$f'(x) = \frac{4x^2 + 3x + 4x - 5}{(x^2)^2}$$

$$f'(x) = 6x^2$$

$$17. g(y) = 2y(3y^2-1)(y^2+2y+3)$$

$$g'(y) = 2y(3y^2 - y^2 + 6y^3 - 2y + 9y^2 - 3)$$

$$g'(y) = 2y(3y^4 + 6y^3 + 8y^2 - 2y - 3)$$

$$g'(y) = 6y + 12 + 16y^5 - 4y^2 - 6y$$

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

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

$$f'(x) = \frac{2x^3 + 4x - 2x^3 + 8x}{(x^2+2)^2} = f'(x) = \frac{12x}{(x^2+2)^2}$$

$$19. g(t) = \frac{t-1}{t^2+2t+1}$$

$$g'(t) = \frac{(1-0)(t^2+2t+1) - (t-1)(2t+2+0)}{(t^2+2t+1)^2}$$

$$g'(t) = \frac{(t^2+2t+1) - (t-1)(2t+2)}{(t^2+2t+1)^2}$$

$$20. u(x) = \frac{1}{(x+2)^2}$$

$$u'(x) = \frac{0(x+2)^2 - [2(x+2)(1)]}{[(x+2)^2]^2}$$

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

$$21. v(t) = \frac{1}{(t-1)^3}$$

$$v'(t) = \frac{0}{(t-1)^3} - \frac{1}{(1-0)^2}$$

$$22. h(x) = 2x^3 + x^2 - 5x + 17$$

$$h'(x) = \frac{6x^2 + 2x - 5}{(2x-5)^2}$$

$$h'(x) = \frac{(2x-5)(6x^2+2x-5) - (2x-5)^2(3)}{(2x-5)^4}$$

$$23. g(x) = \frac{3x}{x^3+7x-5}$$

$$g'(x) = \frac{(3)(x^3+7x-5) - (3x)(3x^2+7)}{(x^3+7x-5)^2}$$

$$g'(x) = \frac{3x^3+21x-15-9x^3-21x}{(x^3+7x-5)^2}$$

$$g'(x) = \frac{-6x^3-15}{(x^3+7x-5)^2}$$

$$24. - f(t) = \frac{1}{\left(t + \frac{1}{t}\right)^2}$$

$$f'(t) = \frac{1}{3t^2}$$

$$25. - g(x) = \frac{1}{x} - \frac{3}{x^2}$$
$$\frac{3}{x^3} - \frac{3}{x^4}$$

$$g'(x) = \frac{\frac{1}{x^2} - \frac{4x}{x^3}}{\left[\frac{2}{x} - \frac{3}{x^2}\right]} \left[\frac{2}{x^3} - \frac{3}{x^2}\right] \left[\frac{6x^4 - 12x^3}{x - x^6}\right]$$