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Actividad: DERIVADAS

Nombre de la Materia: BIOMATEMATICAS

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

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

$f(x) = 6x - 1$

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

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

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

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

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

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

$f'(x) = 12x + 5$

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

$g'(x) = \frac{d}{dx}\ (2x^2-1) \cdot (x^3+2)$

$g'(x) = (2x^5 + 4x^2 - x^3 - 2)$

$g'(x) = (2x^5) + (4x^2) - (x^3) - (2)$

$g'(x) = 2 \cdot 5x^4 + 4 \cdot 2x - 3x^2 - 0$

$g'(x) = 10x^4 - 3x^2 + 8x$

5.. $h(x) = (x+1)^2$

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

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

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

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

$g'(t) = \frac{d}{dt}\ (4t-7)^2$

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

$g'(t) = 2g \cdot 4$

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

$g'(t) = 32t - 56$

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

$f'(y) = \frac{d}{dy}\ (y \cdot (2y-1) \cdot (2y+1))$

$f'(y) = \frac{d}{dy}\ (y \cdot (4y^2-1))$

$f'(y) = (4y^3 - y)$

$f'(y) = (4y^3) - (y)$

$f'(y) = 4 \cdot 3y^2 - 1$

$f'(y) = 12y^2 - 1$

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

$$f'(x) = \frac{d}{dx}\left(4x^4 - \frac{1}{x^2}\right)$$

$$f'(x) = (4x^4) - \left(\frac{1}{x^2}\right)$$

$$f'(x) = 4 \cdot 4x^3 - \left(-\frac{2x}{(x^2)^2}\right)$$

$$f'(x) = \frac{16x^6 + 2}{x^3}$$ //

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

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

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

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

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

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

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

$$f'(t) = 16 - 8t^2 + t^4$$ //

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

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

$$h'(x) = \frac{-6x-3}{(x^2+x+1)^2}$$ //

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

$$f'(x) = \frac{d}{dx}\left(\frac{1}{1-\frac{2}{x}}\right)$$

$$f'(x) = \left(\frac{1}{\frac{x-2}{x}}\right)$$

$$f'(x) = \left(\frac{x}{x-2}\right)$$

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

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

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

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

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

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

$g'(t) = 2t^4 + 2t^3 + 2t + 3t^4 + 2t^3 + 3t^2 + 2t$

$g'(t) = 5t^4 + 4t^3 + 3t^2 + 4t$ //

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

$f'(x) = \frac{d}{dx}\left((2x^3-3)\cdot(17x^4-6x+2)\right)$

$f'(x) = (34x^7 - 12x^4 + 4x^3 - 51x^4 + 18x - 6)$

$f'(x) = (34x^7 - 63x^4 + 4x^3 + 18x - 6)$

$f'(x) = (34x^7) + (-63x^4) + (4x^3) + (18x) - (6)$

$f'(x) = 34 \cdot 7x^6 - 63 \cdot 4x^3 + 4 \cdot 3x^2 + 18 - 0$

$f'(x) = 238x^6 - 252x^3 + 12x^2 + 18$ //

(15).. $g(z) = \frac{1}{22} - \frac{1}{32^2}$

$g'(z) = \frac{d}{dz}\left(\frac{1}{22} - \frac{1}{32^2}\right)$

$g'(z) = \left(\frac{1}{22} - \frac{1}{1024}\right)$

$g'(z) = \left(\frac{501}{11264}\right)$

$g'(z) = 0$

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

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

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

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

$$f'(x) = 2 - 0 - 4 \cdot \frac{1}{x^2} - \left(-5 \frac{2x}{(x^2)^2}\right)$$

$$f'(x) = 2 - \frac{4}{x^2} + \frac{10}{x^3}$$ //

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

$$g'(y) = \frac{d}{dy}\left(2y(3y^2 - 1)(y^2 + 2y + 3)\right)$$

$$g'(y) = \left((6y^3 - 2y)(y^2 + 2y + 3)\right)$$

$$g'(y) = (6y^5 + 12y^4 + 18y^3 - 2y^3 - 4y^2 - 6y)$$

$$g'(y) = (y^5 + 12y^4 + 16y^3 - 4y^2 - 6y)$$

$$g'(y) = (6y^5) + (12y^4) + (16y^3) + (-4y^2) + (-6y)$$

$$g'(y) = 6 \cdot 5y^4 + 12 \cdot 4y^3 + 16 \cdot 3y^2 - 4 \cdot 2y - 6$$

$$g'(y) = 30y^4 + 48y^3 + 48y^2 - 8y - 6$$ //

⑱.. $f(x) = \dfrac{x^2-4}{x^2+4}$

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

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

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

$$f'(x) = \frac{16\,x}{(x^2+4)^2}$$

⑲.. $g(t) = \dfrac{t-1}{t^2+2t+1}$

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

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

//

⑳.. $U(x) = \dfrac{1}{(x+2)^2}$

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

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

//

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

$v'(t) = \frac{d}{dt}\left(\frac{1}{(t-1)^3}\right)$

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

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

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

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

$v'(t) = -\frac{3}{(t-1)^4}$ //

(22).- $h(x) = \frac{2x^3 + x^2 - 3x + 17}{2x-5}$

$h'(x) = \frac{d}{dx}\left(\frac{2x^3 + x^2 - 3x + 17}{2x-5}\right)$

$h'(x) = \frac{(2x^3 + x^2 - 3x + 17)(2x-5) - (2x^3 + x^2 - 3x + 17)(2x-5)}{(2x-5)^2}$

$h'(x) = \frac{(2 \cdot 3x^2 + 2x - 3)(2x-5) - (2x^3 + x^2 - 3x + 17) \times 2}{(2x-5)^2}$

$$h'(x) = \frac{8x^3 - 28x^2 - 10x - 19}{(2x-5)^2}$$

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

$$g'(x) = \frac{d}{dx}\left(\frac{3x}{x^3+7x-5}\right)$$

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

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

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

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

$$f'(t) = \frac{d}{dt}\left(\frac{1}{\left(1+\frac{1}{t}\right)^2}\right)$$

$$f'(t) = \left(\frac{1}{\frac{(t+1)^2}{t^2}}\right)$$

$$f'(t) = \left(\frac{t^2}{(t-1)^2}\right)$$

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

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

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

SPRINKLE THAT STUFF everywhere

$$\frac{U}{V} = \frac{U'V - UV'}{V^2}$$

25) $$g(x) = \frac{\overbrace{\frac{1}{x} - \frac{2}{x^2}}^{U}}{\underbrace{\frac{2}{x^3} - \frac{3}{x^4}}_{V}} \qquad g'(x) = \frac{\quad}{\left[\frac{2}{x^3} - \frac{3}{x^4}\right]^2}$$

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

$$g(x) = \frac{-2}{x^2} \qquad g'(x) = \frac{0(x^2) - 2(2x)}{(x^2)^2} = \frac{-4x}{x^4}$$

$$h(x) = \frac{2}{x^3} \qquad h'(x) = \frac{0(x^3) - 2(3x^2)}{(x^3)^2} = \frac{-6x^2}{x^6}$$

$$i(x) = \frac{-3}{x^4} \qquad i'(x) = \frac{0(x^4) - 3(4x^3)}{(x^4)^2} = \frac{-12x^3}{x^8}$$

$$g'(x) = \frac{\left[\frac{1}{-x^2} - \frac{4x}{x^4}\right]\left[\frac{2}{x^3} - \frac{3}{x^4}\right] - \left[\frac{1}{x} - \frac{2}{x^2}\right]\left[\frac{-6x^2}{x^2} - \frac{12x^3}{x^8}\right]}{\left[\frac{2}{x^3} - \frac{3}{x^4}\right]^2} \quad //$$