Nombre del Alumno: Yadira Antonio Ordoñez

Nombre de la actividad: Derivadas

Nombre de la Materia: Biomatemáticas

Nombre del profesor: Dr. Gordillo Espinosa German

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

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

$f(x) = 6x - 1$

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

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

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

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

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

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

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

$v^n = nv \cdot v'$

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

$g'(x) = \underbrace{(4x)}_{v'}\underbrace{(x^3+2)}_{v} + \underbrace{(2x^2-1)}_{v}\underbrace{(3x^2)}_{v'}$

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

$h'(x) = (3x+0)^2$

$h'(x) = (3x)^2$

$h'(x) = 2(3x)$

$h'(x) = 6x$

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

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

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

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

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

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

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

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

$f'(x) = 16x^3 - \left[\frac{0 \cdot x^2 - 1 \cdot 2x}{(x^2)^2}\right]$

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

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

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

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

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

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

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

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

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

$f'(x) = \frac{0\left[1-\frac{2}{x}\right] - 1\left(0 - \frac{0(x) - 2(1)}{(x)^2}\right)}{\left(1-\frac{2}{x}\right)^2}$

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

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

13.- $g(t) = \overbrace{(t^2+1)}^{U}\overbrace{(t^3+t^2+1)}^{V'}$

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

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

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

$f'(x) = (6x^2)(17x^4-6x+2) + (2x^3-3)(64x^3-6(1)+0)$

$f'(x) = (6x^2)(17x^4-6x+2) + (2x^3-3)(64x-6)$

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

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

$= \frac{2}{3z^2} - z^2$

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

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

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

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

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

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

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

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

$f(x) = \frac{4x^3+16x-2x^2+8x}{(x^2+2)^2}$

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

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

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

$g'(t)=\dfrac{-t^2+2t+3}{(t^2+2t+1)^2}$

20.- $U(x)=\dfrac{1}{(x+2)^2}=\dfrac{1}{x^2+8x+4}$

$U'(x)=\dfrac{-(1)(2x+8)}{(x^2+8x+4)^2}$

$U'(x)=-\dfrac{2x+8}{(x^2+8x+4)^2}$

21.- $U(t)=\dfrac{1}{(t-1)^3}$

$U'(t)=\dfrac{0(3t-0)-(1)(3t)}{[(t-1)^3]^2}$

$U'(t)=\dfrac{-3t}{(t-1)^6}$

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

$h'(x)=\dfrac{8x^3-4x^2-10x-49}{(2x-5)^2}$

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

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

$$g'(x) = \frac{3x^5+27x-15-9x^3-21}{(x^3+7x-5)^2}$$

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

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

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

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

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

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

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

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

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