

Universidad del sureste Campus Comitán

Licenciatura en Medicina Humana

Tema: Ejercicios y apuntes en clase

Nombre del alumno: Iván Alonso López López

Grado: 2do

Grupo: "B"

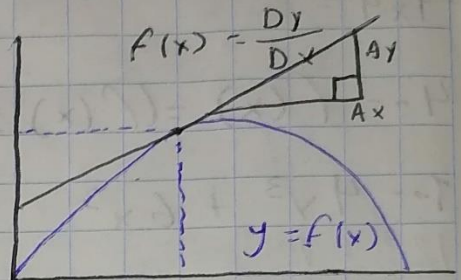
Materia: Biomatemáticas

Docente: Rosvani Margine Morales Irecta

PASIÓN POR EDUCAR

Derivada de la función en el punto marcado es equivalente a la pendiente de la recta tangente

Hto \rightarrow v. independientes
 Hto \rightarrow v. dependientes



Reglas de la derivación

1.- $f(x) = C$

Derivada
 $f(x) = 0$ \leftarrow 5.º la fórmula es constante siempre será 0
 $x = 1$ \leftarrow 5.º se tiene x, será 1

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

$f(x) = n x^{n-1}$
 $x^3 = 3x^2$

Ejercicio

$x^7 = x^{\frac{7}{7}} = 7x^{\frac{7}{7}-1} = 7x^0 = 7$
 $x^{10} = 10x^{10-1} = 10x^9$
 $x^{20} = 20x^{20-1} = 20x^{19}$
 $x^8 = 8x^{8-1} = 8x^7$
 $x^4 = 4x^{4-1} = 4x^3$

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

$$1 - 7 \times 6 = 42 \times 5$$

$$2 - 8 \times 2 = 16 \times$$

$$3 - 6 \times = 6$$

$$4 - 2 \times 3 = 6^2$$

$$5 - 9 \times 4 = 36 \times 2$$

$$4 - (f(x) \pm g(x)) \quad f'(x) = f' \pm g'$$

$$1 - 4x^3 + 6x^3$$

$$12^3 + 18^3 = 30^3$$

$$2 - x^4 + x^3$$

$$4^3 + 3 = 7$$

$$3 - 2x^2 - 8$$

$$4x^2 - 8^2 = -4 \rightarrow 1 = x$$

$$4 - 7x^3 - 5x^5$$

$$21^3 - 25^5 = -4 \times \dots$$

$$5 - 10x^3 + 2x$$

$$30x^3 + 2 = 32^3$$

Tarea

$$1 - f(x) = 3x^2$$

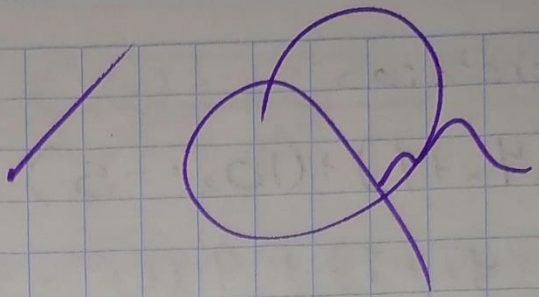
$$f(x) = 3(2) = 6x$$

$$2 - f(x) = 5$$

$$f(x) = 0$$

$$3^{\circ} - F(x) = -2x$$

$$F'(x) = -2(x^{1-1}) = -2$$



$$4^{\circ} - F(x) = -2x + 2$$

$$F'(x) = -2(x^{1-1}) + 2$$

$$-2 = 0 //$$

$$5^{\circ} - F(x) = -2x^2 - 5x$$

$$F'(x) = 2(2x^{2-1}) - 5(x) = -5$$

$$\underline{\underline{4x}}$$

$$4) F(x) \quad f \cdot g$$

$$F'(x)$$

$$f' + g'$$

$$5^{\circ} - F(x) \quad (f+g)'$$

$$F'(x) = fg' + f'g$$

$$(4x^2 + x) + (5x^2 - x)$$

→ Se deriva primero el segundo y luego se multiplica por el primero

$$[10x + 1(4x^2 + x)] + [8x + 1(5x^2 - x)]$$

$$20 + 3x + 8x + 1(10 - 1)9$$

Ejercicios

$$1 - (4x+1) + (10x^2-5)$$

$$20x(4x+1) + 4(10x^2-5)$$

$$2 - (3x^3+2x) + (6x^4+6) = (9x^2+2)(24x^3)$$

$$\boxed{(24x^3)(3x^3+2x)} + \boxed{(9x^2+2)(6x^4+6)}$$

$$3 - (2x^4+x^3) - (5x^3-8x^2) = (8x^3+3x^2) - (15x^2-16x)$$

$$\boxed{(2x^4+x^3) \cdot (15x^2-16x)} - \boxed{(8x^3+3x^2) - (5x^3-8x^2)}$$

$$4 - (32x-2) - (6x-1) - 16$$

$$\boxed{(2-6)(32x-2)} + \boxed{16 - (6x-1)}$$

$$5 - (7x^2+7) + (2x-3) + 2$$

$$\boxed{(12)(7x^2+7)} + \boxed{(14x)(2x-3)}$$

$$6^{\circ} \quad f(x) = \left[\frac{f(x)}{g(x)} \right]$$

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

$$f(x) = \frac{4x - 5}{10x^2 - 5}$$

$$f'(x) = \frac{20(4x - 5) - 4(10x^2 - 5)}{(10x^2 - 5)^2}$$

Ejercicio

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

$$1^{\circ} - f(x) = \frac{5x^2 + 4x}{6x^3}$$

$$\frac{10x^2(5x^2 + 4x) - 10x + 4(6x^3)}{(6x^3)^2}$$

$$2^{\circ} - f(x) = \frac{3x^5 - 7x^4}{2x}$$

$$\frac{28x^3(3x^5) - 15x^4(7x^4)}{(2x)^2}$$

$$3^{\circ} - f(x) = \frac{10x^2 + 5x}{15x - 2}$$

$$\frac{15(10x^2 + 5x) - 20x + 5(15x - 2)}{(15x - 2)^2}$$

~~49 - 2x - 100~~

$$4 - f(x) \frac{2x^{10}}{2x^5}$$

$$\frac{10x^4(2x^{10}) - 20x^9(2x^5)}{(2x^5)^2}$$

$$50 - f(x) \frac{58x}{60x}$$

$$\frac{60(58x) - 53(60x)}{(60x)^2}$$

Teorema: la derivada de 1 potencia entera, de 1 función $f(x)$

Sea $y = [f(x)]^n$ entonces

$$y' = n [f(x)]^{n-1} f'(x)$$

$$f(x) = (2x+3)^3$$

$$y' = (3)(2x+3)^{3-1}(2)$$

$$y' = (3)(2x+3)^2(2)$$

$$y' = 6(2x+3)^2$$

$$1.) y' = (6x^3 - 5x^2 + 4)^3$$

$$y' = (3)(6x^3 - 5x^2 + 4)^2 (18x - 10)$$

$$y' = 54x - 30(6x^3 - 5x^2 + 4)^2$$

$$2.) y' = (5x^2 + 10x)^2$$

$$y' = 2(5x^2 + 10x)^2 (10x + 10)$$

$$y' = 20x + 20(5x^2 + 10x)^2$$

$$3.) y' = (7x^3 - 2x^2 + 5)^4$$

$$y' = 4(7x^3 - 2x^2 + 5)^3 (21x + 4)$$

$$y' = 84x + 8(7x^3 - 2x^2 + 5)^3$$

$$4.) y' = (2x^{10} - 2x^5)^5$$

$$y' = 5(2x^{10} - 2x^5)^4 (20 - 10)$$

$$y' = 100x - 50(2x^{10} - 2x^5)^4$$

$$5.) y' = (3x^3 - 2x^2)^6$$

$$y' = 6(3x^3 - 2x^2)^5 (9 - 4)$$

$$y' = 30x - 24(3x^3 - 2x^2)^5$$

