



**Universidad del sureste**  
**Campus Comitán**  
**Licenciatura en Medicina Humana**

**Tema: Ejercicios**

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**Grupo: "B"**

**Grado: Segundo semestre**

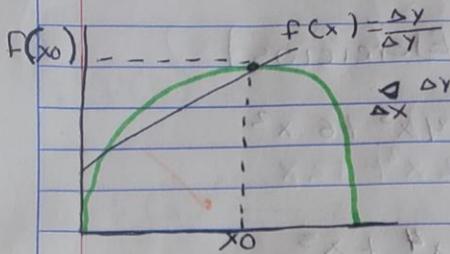
**Materia: Biomatemáticas**

**Dra. Rosvani Morales Irecta**

Comitán de Domínguez Chiapas a 19 de marzo del 2022

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

El PH es independiente



Ho independiente  
Hto v. dependiente

### Función Reglas de la derivación.

1)  $f(x) = C$

Derivada  
 $f(x) = 0$   
 $x = 1$

2)  $f(x) = x^n$

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

3)  $f(x) = C f(x)$

#### Ejercicios ✓

1)  $x^7 \quad x^7 = 7x^6$

2)  $x^{10} \quad x^{10} = 10x^9$

3)  $x^{20} \quad x^{20} = 20x^{19}$

4)  $x^2 \quad x^2 = 2x$

5)  $4x^4 \quad = 4x^3$

$$f(x) = cf'(x)$$

$$f(x) = 3 \times 5$$

$$3(5 \times 4)$$

$$15 \times 4$$

$$2x^3 + x$$
$$6x^2 + 1$$

(Ejercicios)

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

$$2) 8x^2 = 16x$$

$$3) 6x = 6$$

$$4) 2x^3 = 6x^2$$

$$5) 9 \times 4 = 36x^3$$

$$1) 4x^3 + 6x^2$$

$$12x^2 + 12x$$

$$2) x^4 + x^3$$

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

$$3) 2x^2 - 8x = (x) + (x)$$

$$4x^2 - 8$$

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

$$= 21x^2 - 25x^4 = (x) + (x)$$

$$5) 10x^2 + 2x$$

$$= 20x + 2$$

Handwritten scribbles and a circled '3'.

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

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

### (EJERCICIOS)

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

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

$$2.) (3x^3+2x) + (6x^4+6)$$

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

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

$$15 - 8x^2$$

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

$$6(32x-2) - 33(6x-1)$$

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

$$2(7x^2+7) + 14x(2x-3)$$

$$f'(x) = 0 = \textcircled{0}$$

$$f'(x) =$$

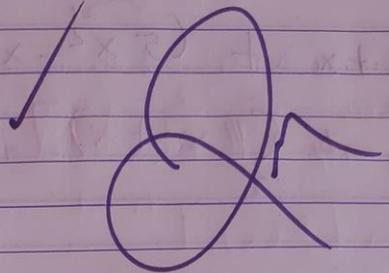
1)  $f(x) = 3x^2 = 6x$

2)  $f(x) = 5 = 0$

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

4)  $f(x) = -2x + 2 = -2$

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



$$5) f(x) = \frac{58x}{60x} \quad \frac{60(58x) - 58(60x)}{(60x)^2}$$

TEOREMA: La derivada de  $n$  potencia entera, de  $n$  función  $f(x)$

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

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

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

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

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

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

## (EJERCICIOS)

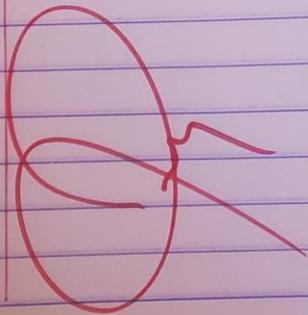
$$1) y' = (6x^3 - 5x^2 + 4)^3 \quad y' = (6x^3 - 5x^2 + 4)^3 =$$
$$3(6x^3 - 5x^2 + 4)^2 (18x^2 - 10)$$
$$(54x^2 - 30)(6x^3 - 5x^2 + 4)^2$$

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

$$3) y' = (7x^3 - 2x^2 + 5)^4 \quad 4(7x^3 - 2x^2 + 5)^3 (21x^2 - 2x)$$
$$84x^2 - 8x(7x^3 - 2x^2 + 5)^3$$

$$4) y' = (2x^{10} - 2x^5)^5 \quad 5(2x^{10} - 2x^5)^4 (20x^9 - 10x^4)$$
$$100x^9 - 50x^4(2x^{10} - 2x^5)^4$$

$$5) y' = (3x^3 - 2x^2)^6 \quad y = 6(3x^3 - 2x^2)^{6-1}$$
$$(9x^2 - 4x)$$
$$y = 54x^2 - 24x(3x^3 - 2x^2)^5$$



$$g) f(x) = \frac{f(x)}{g(x)}$$

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

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

$$f'(x) = \frac{20x(4x-5) - 4(10x^2-5)}{(16x^2-5)^2}$$

$$1) f(x) = \frac{5x^2+4x}{6x^3} \quad 18x^2(5x^2+4x) - 10x+4$$

$$2) f(x) = \frac{3x^5-7x^4}{2x} \quad \begin{array}{l} (3)^5 - 7 \times 4 = 28 \\ (2x)^4 = 8 \end{array}$$

$$3) f(x) = \frac{10x^2+5x}{15x-2} \quad 15(10x^2+5x) - 20x+5(15x-2)$$

$$4) f(x) = \frac{2x^{10}}{2x^5} \quad \frac{2(5x^4)(2x^{10}) - [2(16x^4)]}{(2x^5)^2}$$

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