



**Universidad del sureste**

**Medicina humana campus Comitán**

**Derivadas**

**Biomatematicas**

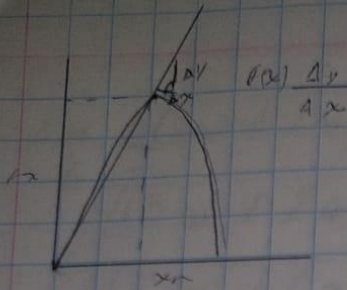
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**Segundo semestre Grupo "B"**

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

H<sub>6</sub> → V. independiente

H<sub>7</sub> → V. dependiente

### Reglas de derivación

Función  
1)  $f(x) = c$

Derivado

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

1)  $f(x) = 0$

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

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

$x^3 = 3x^2$

$\frac{d}{dx} = a = e$

3)  $f(x) = 3x^5$

$3(5x^4)$

$15x^4$

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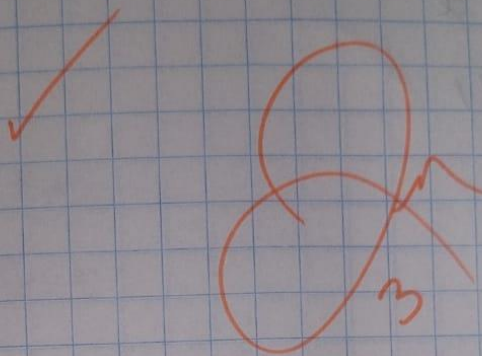
1)  $x^7 = 7x^6$

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

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

4)  $x^2 = 2x$

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



1)  $7x^6 = 7(6x^5) = 42x^5$

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

3)  $6x = 6$

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

5)  $9x^4 = 9(4x^3) = 36x^3$

1)  $4x^3 + 6x^2 = 12x^2 + 12x =$

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

3)  $2x^2 - 6x = 4x - 8 =$

4)  $7x^3 - 5x^3 = 21x^2 - 15x^2 =$

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



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

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

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

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

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

Tarea

18-03-2021

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

$$2) f(x) = 5 = 5 \cdot = \emptyset$$

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

$$4) f(x) = -2x + 2 = -2 + 2 \cdot = \emptyset = -2$$

$$5) f(x) = 2x^2 - 5 = 4x - 5 \cdot = \boxed{+4x} - 5$$

$$1) \frac{f(x)}{6x}$$



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

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

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

$$[14x^3(3x^3 + 2x)] + 9x^2 + 2(6x^2 + 6)$$

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

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

$$4) (3x-2) - (6x-1)$$

$$[6(6x-1) - 32]$$

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

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

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

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



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

$$f'(x) = \frac{(8x + 4) \cdot 6x^3 - 10x + 4 \cdot (6x^3)^2}{(6x^3)^2}$$

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

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

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

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

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

$$f'(x) = \frac{10x^9(2x^{10}) - 20x^9}{(2x^5)^2}$$

$$5) f(x) = \frac{58x}{60x}$$

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



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

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

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

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

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

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

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

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

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

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

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

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

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