Universidad Del Sureste

Campus Comitán

Licenciatura en Medicina Humana

Tema:

“Derivadas”

Alumna:

Anzueto Aguilar Mónica Monserrat.

Grupo: A

Grado:2°

Materia:

“BIOMATEMÁTICAS”

Docente:

Dra. Rosvani Margine Morales Irecta

Comitán de Domínguez, Chiapas a 02 de abril de 2022.

Ejercicios

FÓRMULA 6

22-03-22

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

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

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

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

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

TEOREMA: LA DERIVADA DE 1 POTENCIA ENTERA DE 1 FUNCIÓN SEA:

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

Ejemplo

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

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

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

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

Ejercicios del teorema

22-03-22

1) $f(x) = (3x^4 - 5)^2$

$f'(x) = 2(3x^4 - 5)^{2-1}(12x^3)$

$f'(x) = 2(3x^4 - 5)(12x^3)$

$f'(x) = 24x^3(3x^4 - 5)$

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

$f'(x) = 3(x+2)^2(1)$

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

3) $f(x) = (6x^2 - 5x + 1)^4$

$f'(x) = 4(6x^2 - 5x + 1)^3(12x - 5)$

$f'(x) = 48x - 20(6x^2 - 5x + 1)^3$

4) $f(x) = (2xy - 3)^5$

$f'(x) = 5(2xy - 3)^4(2) = 10(2xy - 3)^4$

5) $f(x) = (5x^2 + 4y - 3)^2$

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

$20x + 8(5x^2 + 4y - 3)$

TAREA

22-03-22

= DERIVADAS =

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

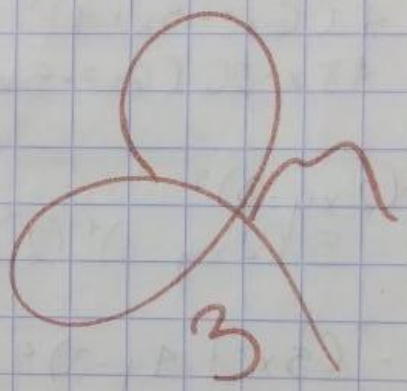
2) $f(x) = 5$
$f'(x) = 0$

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

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

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

6) $f(x) = 4x^3 + 6x$
$f'(x) = 12x^2 + 6$



7) $f(x) = 8x^6$
$f'(x) = 48x^5$

8) $f(x) = 7$
$f'(x) = 0$

9) $f(x) = (3x^3 + 2x) + (6x^4 + 6)$
$f'(x) = 21x^3 (3x^3 + 2x) + 9x^2 + 2 (6x^4 + 6)$

10) $f(x) = (8x + 2) - (3x^2 - x)$
$f'(x) = 6x - 1 (8x + 2) - 8 (3x^2 - x)$

TAREA 22-03-22.

= DERIVADAS =

11) $f(x) = (7x^4 + 6x^3 - 5x^2 + x)^3$

$f'(x) = (3)(7x^4 + 6x^3 - 5x^2 + x)^2 (28x^3 + 18x^2 - 10x + 1)$

$f'(x) = (84x^7 + 54x^6 - 30x^4 + 3)(7x^4 + 6x^3 - 5x^2 + x)^2$

12) $f(x) = \dfrac{8x^6 - 6x^3 - 1}{2x^4}$

$f'(x) = \dfrac{8x^3(8x^6 - 6x^3 - 1) - (48x^5 - 18x^2)(2x^4)}{(2x^4)^2}$

13) $f'(x) = \dfrac{2x^3 - x^2}{6x^2 + x + 2}$

$f'(x) = \dfrac{(12x + 1)(2x^3 - x^2) - (6x^2 - 2x)(6x^2 + x + 2)}{(6x^2 + x + 2)^2}$

14) $f'(x) = 78$

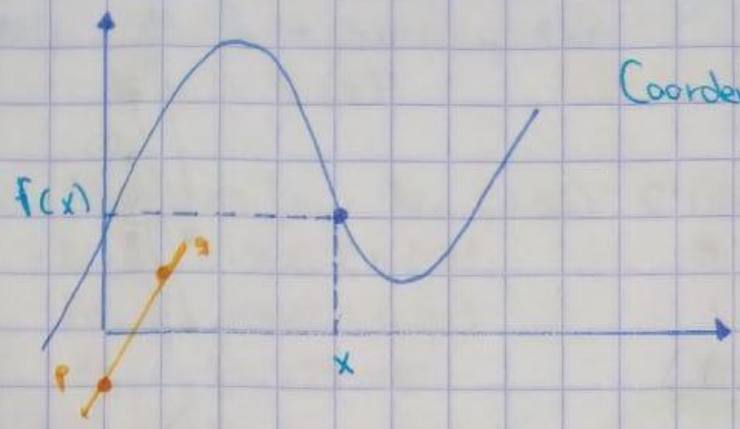
$f'(x) = 0$

15) $f'(x) = (2x^3 + 5x^2 + 6x)^4$

$f'(x) = 4(2x^3 + 5x^2 + 6x)(6x^2 + 10x + 6)$

$(24x^2 + 40x + 24)(2x^3 + 5x^2 + 6x)$

29-03-22.



Coordenada = conjunto.

Traza la gráfica $f(x) = 2x - 1$

Si $f(0)$
$p(0, -1)$

$f(0) = 2(0) - 1$
$f(0) = 0 - 1$
$f(0) = -1$

Si $f(1)$
$q(1, 1)$

$f(1) = 2(1) - 1$
$f(1) = 2 - 1$
$f(1) = 1$

EJERCICIOS:

Si $f(1)$
$p(x, y)$
$p(1, 1)$

Si $f(3)$
$q(x, y)$

① $f(x) = 3x - 2$

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

$q(3, 7)$

$f(x) = 3(3) - 2$
$f(x) = 9 - 2$
$f(x) = 7$

② $f(x) = x^2 + 3$

$f(x) = (1)^2 + 3$
$f(x) = 1 + 3$
$f(x) = 4$
$p(1, 4)$

$f(x) = (3)^2 + 3$
$f(x) = 9 + 3$
$f(x) = 12$
$q = (3, 12)$

③ $f(x) = -x + 2$

$f(x) = -1 + 2$
$f(x) = 1$
$p(1, 1)$

$f(x) = -3 + 2$
$f(x) = -1$
$q(3, -1)$

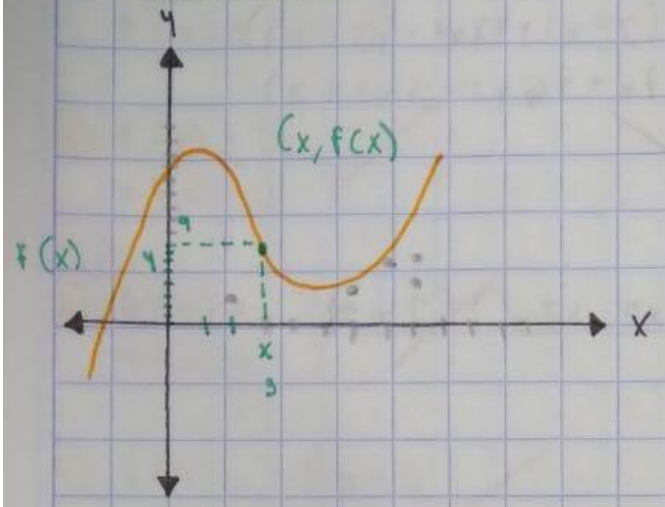
④ $f(x) = 6x + 1$

$f(x) = 6(1) + 1$
$f(x) = 6 + 1$
$f(x) = 7$
$p(1, 7)$

$f(x) = 6(3) + 1$
$f(x) = 18 + 1$
$f(x) = 19$
$q(3, 19)$

23-03-22

Dominio físico: Suma de # redes



• EJERCICIOS

1) $(x = 5x+3, f(x))$

$f(x) = 5x+3$

$y = 5(1)+3$

$y = 8$

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

$f(x) = 5x^2$

$y = 5(1)^2$

$y = 5$

3) $(x - 2x^3, f(x))$

$f(x) = 2x^3$

$y = 2(1)^3$

$y = 2$

4) $(x = 7x, f(x))$

$f(x) = 7x$

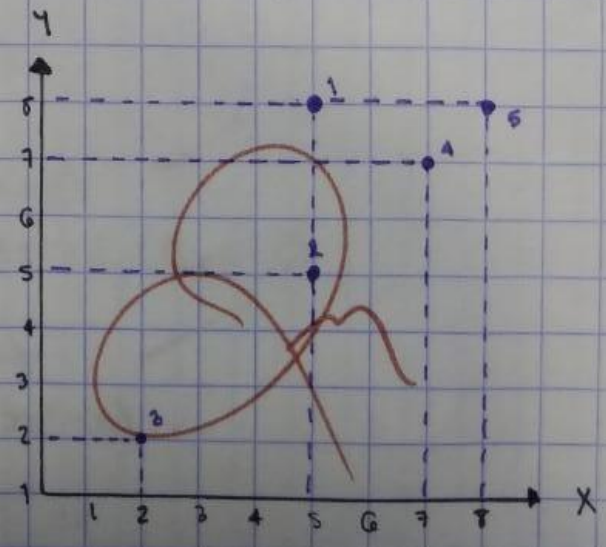
$y = 7(1) = 7$

5) $(x = 8x^2, f(x))$

$f(x) = 8x^2$

$y = 8(1)^2$

$y = 8.$



29-03-22.

1) MO + 35 %/h → 3hrs. y 4hrs.

N_0 2500 UFC

$N(t) = N(t)^h$

→ 3hrs y 4hrs.

$N_{(1)} = N_0 + 0.35 N_0 = N_0 (1.85)^h$

- $N_{(3)} = 2500 (1.85)^3$
  $N_{(3)} = 2500 (6.33)$
  $N_{(3)} = 15,825$ UFC

- $N_{(4)} = 2500 (1.85)^4$
  $N_{(4)} = 2500 (11.71)$
  $N_{(4)} = 29,275$ UFC

2) MO + 60 %. %/h → 1hrs y 5hrs.

$N_{(1)} = N_0 + 0.60 N_0 = N_0 (1.60)^h$

- $N_{(1)} = 2500 (1.60)^1$
  $N_{(1)} = 4000$ UFC

- $N_{(5)} = 2500 (1.60)^5$
  $N_{(5)} = 2500 (10.48)$
  $N_{(5)} = 26,200$ UFC

3) MO + 20 %. %/h → 1hr y 2hrs.

$N_{(1)} = N_0 + 0.20 N_0 = N_0 (1.20)^h$

- $N_{(1)} = 2500 (1.20)$
  $N_{(1)} = 3000$ UFC

- $N_{(2)} = 2500 (1.20)^2$
  $N_{(2)} = 2500 (1.44)$
  $N_{(2)} = 3600$ UFC

4) MO + 35 %. %/h → 6hrs., 12 hrs. y 24 hrs.

$N_{(1)} = NO + 0.35 N_0 = N_0 (1.35)^h$

- $N_{(6)} = 2500 (1.35)^6$
  $N_{(6)} = 2500 (1.35)^6$
  $N_{(6)} = 2500 (6.05)$
  $N_{(6)} = 15,125$ UFC

- $N_{(12)} = 2500 (1.35)^{12}$
  $N_{(12)} = 2500 (36.04)$
  $N_{(12)} = 90,250$ UFC

- $N_{(24)} = 2500 (1.35)^{24}$
  $N_{(24)} = 2500 (1342.74)$
  $N_{(24)} = 3,359,000$ UFC

29-03-22.

1) MO + 35 %/h → 3hrs. y 4hrs.

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  $N_{(24)} = 3,359,000$ UFC

29-03-22

EJERCICIOS: ✓

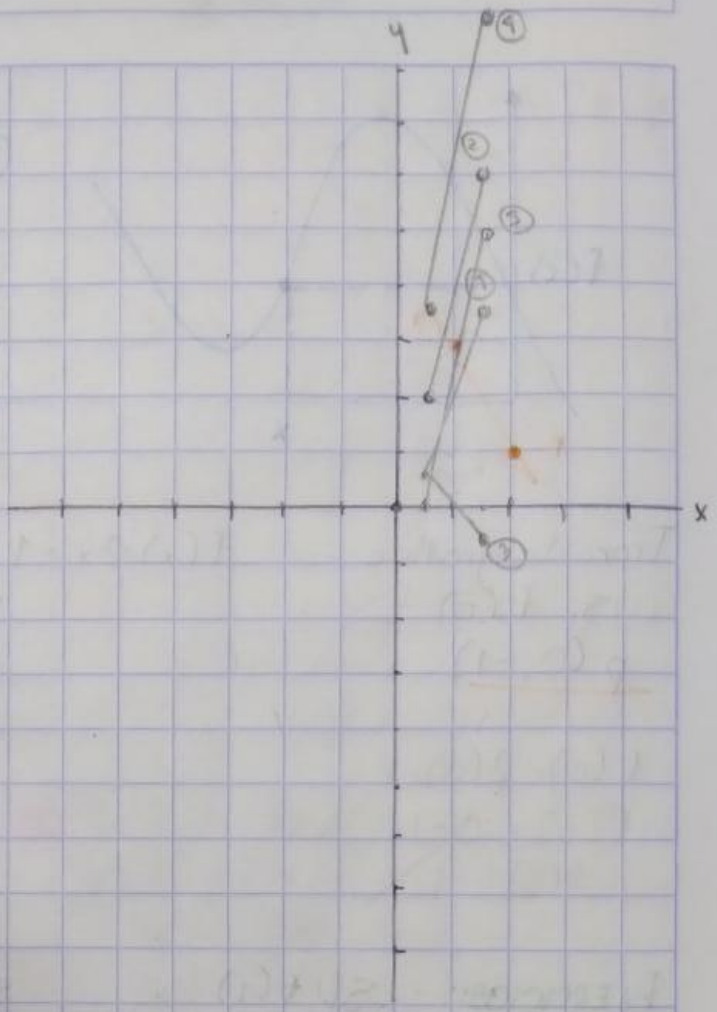
③ $f(x) = 5x - 5$

$f(x) = 5(1) - 5$ $f(x) = 5(3) - 5$

$f(x) = 5 - 5$ $f(x) = 15 - 5$

$f(x) = 0$ $f(x) = 10$

$p\ (1, 0)$ $q = (3, 10)$



CULTIVO MO +50% c/1hr.

· Entonces ... No: 2500 UFC

$$N(t) = N(t)^{4}$$

$N_{(1)} = No + 0.5\,No = No\,(1.5)^{1}$

$N_{(2)} = No\,(1.5)^{2}$

$N_{(3)} = No\,(1.5)^{3}$

30-03-22

Temperatura medida en °C y °F determinada por la igualdad

$$9C - 5F + 160 = 0$$

(f) (x)

Expresa en F c/f de C

$$5F = 9C + 160$$

$$F = \frac{9C + 160}{5}$$

$$F = \frac{9}{5}C + 32 \longrightarrow f(c)$$

Expresa en C c/f de F

$$9C = 5F - 160$$

$$C = \frac{5F - 160}{9} \longrightarrow C(F)$$

38°C

$$f = \frac{9(38) + 160}{5}$$

$$F = \frac{342}{5} + 32$$

$$F = 68.4 + 32$$

$$F = 100.4°F$$

COMPROBACIÓN

$$C = \frac{5(100.4) - 160}{9}$$

$$C = \frac{502 - 160}{9}$$

$$C = \frac{342}{9} = 38°C$$

EJERCICIOS =

30-03-22

→ Convierte de °C a °F ó °F a °C según corresponda y comprueba

1) 20°C

$F = \frac{9}{5}C + 32$

$F = \frac{9(20)}{5} + 32$

$F = \frac{180}{5} + 32$

$F = 36 + 32 = 68°F$

$C = \frac{5F - 160}{9}$

$C = \frac{5(68) - 160}{9}$

$C = \frac{340 - 160}{9}$

$C = \frac{180}{9} = 20°C$

2) 104° F

$C = \frac{5F - 160}{9}$

$C = \frac{5(104) - 160}{9}$

$C = \frac{520 - 160}{9}$

$C = \frac{360}{9} = 40°C$

$F = \frac{9(40)}{5} + 32$

$F = \frac{360}{5} + 32$

$F = 72 + 32 = 104°F$

3) 140°F

$C = \frac{5(140) - 160}{9}$

$C = \frac{700 - 160}{9}$

$C = \frac{540}{9} = 60°C$

$F = \frac{9(60)}{5} + 32$

$F = \frac{540}{5} + 32$

$F = 108 + 32 = 140°F$

5) 37.2°C

$F = \frac{9(37.2)}{5} + 32$

$F = \frac{334.8}{5} + 32$

$F = 66.96 + 32 = 98.96°F$

$C = \frac{5(98.96) - 160}{9}$

$C = \frac{494.8 - 160}{9}$

$C = 37.2°C$

EJERCICIOS

30-03-21

5) 35.5 °C

$F = \frac{9(35.5)}{5} + 32$

$F = \frac{319.5}{5} + 32$

$F = 63.9 + 32 = 95.9°F$

$C = \frac{5(95.9) - 160}{9}$

$C = \frac{179.5 - 160}{9}$

$C = 35.5°C$

6) 95° F

$C = \frac{5(95) - 160}{9}$

$C = \frac{475 - 160}{9}$

$C = \frac{315}{9} = 35°C$

$F = \frac{9(35)}{5} + 32$

$F = \frac{315}{5} + 32$

$F = 63 + 32 = 95°F$

7) - 4° F

$C = \frac{5(-4) - 160}{9}$

$C = \frac{-20 - 160}{9}$

$C = \frac{-180}{9} = -20°C$

$F = \frac{9(-20)}{5} + 32$

$F = \frac{-180}{5} + 32$

$F = -36 + 32 = -4°F$

8) -5°C

$F = \frac{9(-5)}{5} + 32$

$F = \frac{-45}{5} + 32$

$F = -9 + 32 = 23°F$

$C = \frac{5(23) - 160)}{9}$

$C = \frac{115 - 160}{9}$

$C = \frac{-45}{9} = -5°C$