Nombre de la actividad: ¡A derivar se ha dicho!

Materia: Biomatemáticas

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Grado: 2°

Grupo: “A”

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Comitán de Domínguez Chiapas a 02 de abril del 2022.

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

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

5) $f(x) = \frac{50x}{60x} = \frac{60x(50x) + 50x(60x)}{(60x)^2}$

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

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:

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

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

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

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

EJER.

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

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

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

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

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

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

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

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

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

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

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

$3x$

(CORRECCIÓN)

3) $(4)(6x^2-5x+4)^{4-1}(12x)$
$(4)(6x^2-5x+4)^3(12x)$
$48x(6x^2-5x+4)^3$

$4(6x^2-5x+4)^3(12x-5)$
$48x-20(6x^2-5x+4)^3$

4) $(5)(2xy-3)^{5-1}(2)$
$(5)(2xy-3)^4(2)$
$10(2xy-3)^4$

$5(xy-3)^4(2)$
$10(2xy-3)^4$

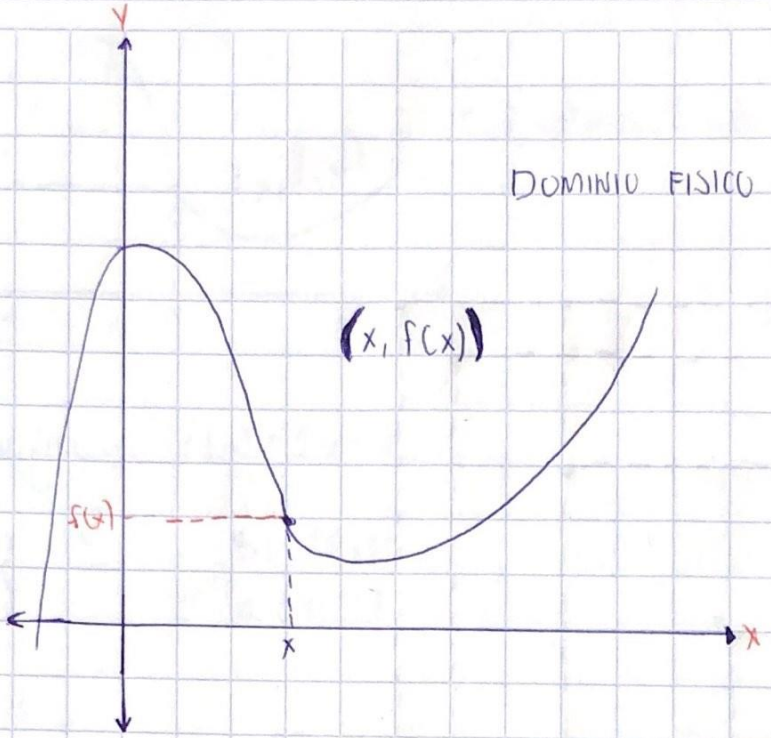
5) $(2)(5x^2+4y-3)^{2-1}(10x)$
$(2)(5x^2+4y-3)(10x)$
$20x(5x^2+4y-3)$

$(2)(5x^2+4y-3)(10x+4)$
$20x+8(5x^2+4y-3)$

TAREA

1) $f(x)=3x^2$
2) $f(x)=5$
3) $f(x)=-2x$
4) $f(x)=-2x+2$
5) $f(x)=-2x^2+2$
6) $f(x)=4x^3+6x$
7) $f(x)=8x^6$
8) $f(x)=7$
9) $f(x)=(3x^3+2x)+(6x^4+6)$
10) $f(x)=(8x+2)-(3x^2-x)$
11) $f(x)=(7x^4+6x^3-5x^2+x)^3$
12) $f(x)=\frac{8x^6-6x^3-4}{2x^4}$
13) $f(x)=\frac{2x^3-x^2}{6x^2+x+2}$
14) $f(x)=78 \longrightarrow 0$
15) $f(x)=(2x^3+5x^2+6x)^4$
$f(x)=(4)(2x^3+5x^2+6x)^{4-1}(6x^2+10x+6)$
$f(x)=24x^2+40x+24(2x^3+5x^2+6x)^3$

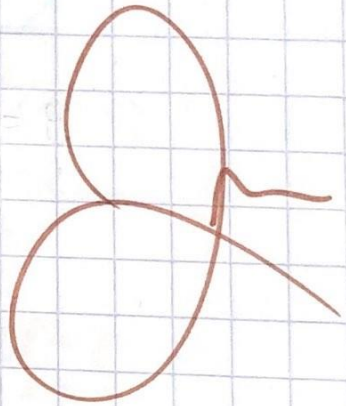
1) $3(2x)=15$
2) 0
3) $-2(x)=2$
4) $+2x$
5) $-4x$
6) $12x^2+6$
7) $8(6x^5)=48x^5$
8) 0
9) $24x^3(3x^3+2x)+9x^2+2(6x^4+6)$
10) $6x(8x+2)-8x(3x^2-x)$
11) $3(7x^4+6x^3-5x^2+x)^{3-1}(28x^3+18x^2-10x+1)$
$f(x)=84x^3+54x^2-30x+3(7x^4+6x^3-5x^2+x$
12) $\frac{8x^3(8x^5-6x^3-4)-48x^5-18x^2(2x^4)}{(2x^4)^2}$
13) $\frac{12x+1(2x^3-x^2)-6x^2-3x^2(6x^2+x+2)}{(6x^2+x+2)^2}$

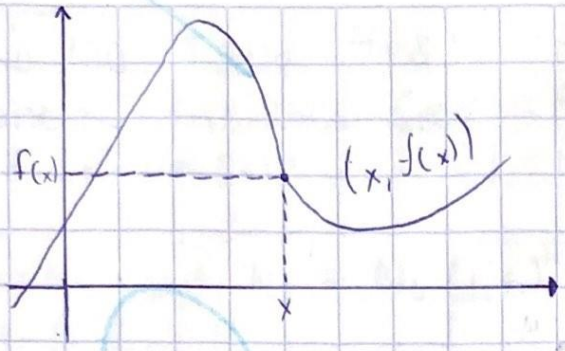


EJEMPLO: $f(x) = 3x$

$y = 3x$

1) $(x = 5(x) + 3x, f(x))$ $\quad f(x) = 5(1) + 3 = 8$
2) $(x = 5x^2, f(x))$ $\quad f(x) = 5(1)^2 = 5$
3) $(x = 2x^3, f(x))$ $\quad f(x) = 2(1)^3 = 2$
4) $(x = 7x, f(x))$ $\quad f(x) = 7(1) = 7$
5) $(x = 8x^2, f(x)$ $\quad f(x) = 8(1)^2 = 8$





Conjunto = coordenada

Traza la grafica $f(x) = 2x - 1$

Si $f(0)$ → $P(0, -1)$

Si $f(1)$ → $q(1, 7)$

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

$f(0) =$

$f(0) =$

$P(\ )$ $\quad q(\ )$

Si $f(1)$ $\quad$ Si $f(3)$

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

1) $P = 3(1) - 2$ $\quad q = 3(3) - 2$
$P = 3 - 2$ $\quad q = 9 - 2$
$P = 1$ $\quad q = 7$

2) $P = (1)^2 + 3$ $\quad q = (3)^2 + 3$
$P = 1 + 3$ $\quad q = 9 + 3$
$P = 4$ $\quad q = 12$

3) $P = -1(1) + 2$ $\quad q = -1(3) + 2$
$P = -1 + 2$ $\quad q = -3 + 2$
$P = +1$ $\quad q = -1$

4) $P = 6(1) + 7$ $\quad q = 6(3) + 7$
$P = 7 + 7$ $\quad q = 18 + 7$
$P = 9$ $\quad q = 19$

5) $P = 5(1) - 5$

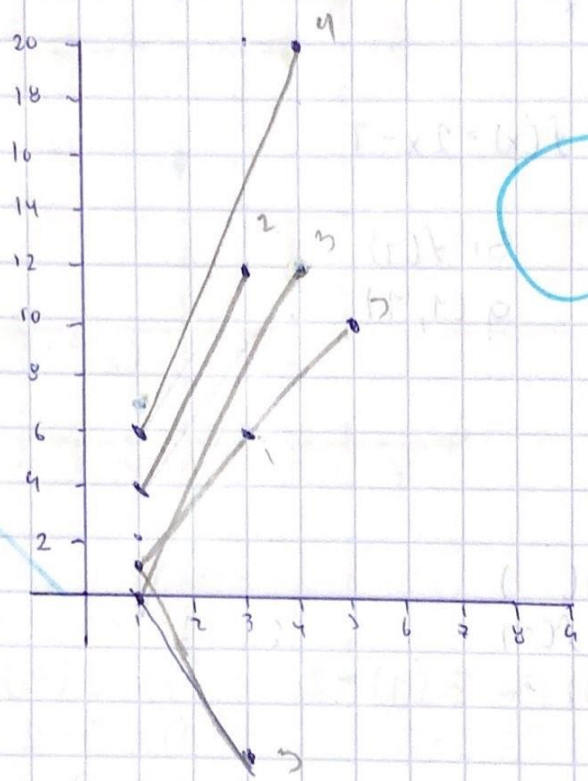
$P = 5 - 5$

$P = 0$

$q = 5(3) - 5$

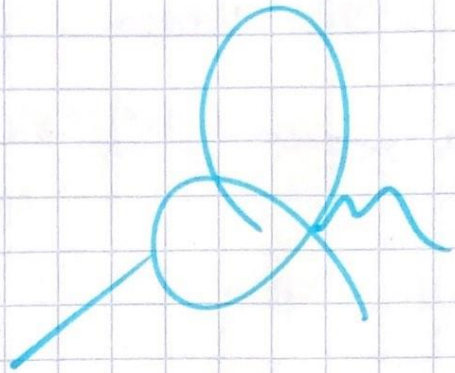
$q = 15 - 5$

$q = 10$



Cultivo MO ↑ 50% c/1 hr
Entonces... $N_0 = 2500$ UFC
$N(t) = N(1)^{hr}$

$N(1) = N0 + 0.5\,N_0 = N_0(1.5)^{hr}$
$N(2) = N0(1.5)^2$
$N(3) = N_0(1.5)^3$



1) M_0 ↑ 85% c/h → 3 hrs y 4 hrs
$N(1) = N_0 + 0.85\,N_0 = N_0(1.85)^h$
$N(3) = N0(1.85)^3 = 6.3316 = 1\,5829$
$N(4) = N0(1.85)^4 = 11.7135 = 29,283.75$

2) MO ↑ 60% c/h → 1 hr y 5 hrs
$N(1) = N0 + 0.6\,N_0 = N_0(1.6)^1$
$N(1) = N0(1.6) = 1.6 = 4000$
$N(5) = N0(1.6)^5 = 10.4857 = 26,214.25$

3) MO ↑ 20% c/h → 1 y 2 hrs
$N(1) = N_0(1.2) = 1.2 = 3000$
$N(2) = N0(1.2)^2 = 1.44 = 3600$

4) MO ↑ 35% c/h → 6, 12 y 24 hrs.
$N0 + (0.35) = N_0(1.35)^6 = 6.05(2500) = 15,125$
$N_0 + (0.35) = N_0(1.35)^{12} = 36.64(2500) = 91,600$
$N_0 + (0.35) = N_0(1.35)^{24} = 1.342.74(2500) = 3,356,975$

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

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

Expresa e °F c/f de °C (x)

$$5F = 9C + 160$$

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

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

Expresa en °C c/f de °F

$$9C = 5F - 160$$

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

ej em: 38°C

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

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

$$f = 68.4 + 32$$

$$f = 100.4°F$$

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

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

$$C = \frac{342}{9} = 38°C$$

Convierte de °C a °F o °F a °C segun corresponda y comprueba

1. 20°C
2. 104°F
3. 140°F
4. 37.1°C
5. 35.5°C
6. 95°F
7. -4°F
8. -5°C

1°) $f = \frac{9(20)}{5} + 32$

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

$f = 36 + 32$

$f = 68°F$

2.) $f = \frac{5(104) - 160}{9}$

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

$f = \frac{360}{9} = 40°C$

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

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

$f = \frac{540}{9} = 60°C$

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

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

$f = 66.96 + 32$

$f = 98.96°F$

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

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

$f = 63.9 + 32$

$f = 95.9°F$

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

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

$f = \frac{315}{9} = 35°C$

7) $f = \frac{5(-4°) - 160}{9}$

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

$f = \frac{140}{9} = 15.55°$

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

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

$f = -9 + 32$

$f = -41°F$