Nombre del trabajo:
A seguir derivando

Materia: Biomatematicas

Nombre del alumno:
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Grado: 2
Grupo: A

Docente:

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Comitán de Domínguez Chiapas a 02 de abril 2022

Reglas de la derivación.

1.- $f(x) = C$ $\quad f(x) = 7$

$f'(x) = 0$ $\quad f'(x) = 0$

2.- $f(x) = x^2$ $\quad f(x) = x^3$

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

3.- $f(x) = Cx$ $\quad f(x) = 3x^5$ $\quad f'(x) = 3(5x^4)$

$f'(x) = Cf(x) = Cf'(x)$ $\quad 15x^4$

4.- $f(x) = f \pm g$ $\quad f(x) = 2x^3 \pm x$

$f' = (f \pm g)' = f' \pm g'$ $\quad f(x) = 6x^2 \pm 1$

$f(x)$:

1) $x^5 = 5x^4$

2) $x^8 = 8x^7$ ✓

3) $x^9 = 9x^8$

4) $x^{11} = 11x^{10}$

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

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

2) $6x^2 - 3 = 12x$

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

4) $3x^6 + x = 18x^5 + 1$ ✓

5) $x^7 - 3x = 7x^6 - 3$

1) $2x^6 = 12x^5$

2) $9x^2 = 8x$

3) $5x^3 = 15x^2$ ✓

4) $6x^4 = 24x^3$

5) $10x^2 = 20x$

VERYGREEN

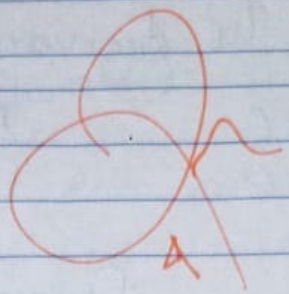
Regla

5.) $f(x) = fg + Fg$

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

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

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



Ejercicios

1) $(5x^2+2) + (3x-2) = 3(5x^2+2) + 10x(3x-2)$

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

3) $(2x+10) - (2x^3-10) = 6x^2(2x+10) - 2(2x^3-10)$

4) $(8x^4+10x) + (6x-3) = 6(8x^4+10) + 32x^3(6x-3)$

5) $(20x+2) - (8x^5+6) = 90x^4(20x+2) - 20x(8x^5+6)$

Regla 6

6. $f(x) =$

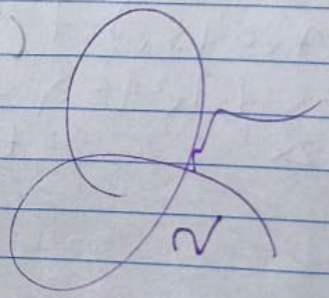
10/03/22

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

2) $8x^6 = 48x^5 = 8(6x^5)$
Regla 3

3) $7 = F'(x) = 0$
Regla 1

4) $(3x^3+2x)+6x^4+6) =$
$24x^3(3x^3+2x)+9x^2+2(6x^4+6)$
Regla 5



5) $(8x+2)-(8x^2-x) =$
$6x^{-1}(8x+2)-8x(3x^2-x)$

6) $(7x^2+4x)+(6x^3-2x^2)$
$18x^2(7x^2+4x)+14x+4(6x^3-2x^2)$
$18x^2-4x$

7) $(2x^3-4x^2)+(2x+x)$
$2+1(2x^3-4x^2)+6x^2(2x+x)$
$6x^2-8x$

8) $(16x^4+2x^5)-(2x^6+x^5)$
$12x^5(6x^4+2x^5)-24x^3(2x^6+x^5)$
$12x^3+5x^4$ $-24x^3+10x^4$

16/03/22

Regla.

$$6.\ (x) = \left(\frac{f}{g}\right)' = \frac{f'g - fg'}{g^2}$$

9) $(3x^5 + 6) - (8x^2 - 2x)$

$16x - 2(3x^5 + 6) - 15x^4(8x^2 - 2x)$

10) $(9x^2 + 3x) + (x^3 + x^2)$

$3x^2(9x^2 + 3x) + 18x(x^3 + x^2)$

$3x^2 + 2x \qquad + 18x + 3$

VERYGREEN

22/03/22

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

Eg: $f(x) = \frac{4x+1}{10x^2-5} = \frac{20x(4x+1) - 4(10x^2-5)}{(10x^2-5)^2}$

Ejercicios.

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

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

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

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

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

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22/03/22

Teorema: la derivada de 1 potencia entera de 1 función
sea: $y = [f(x)]^n$ entonces $y' = n[f(x)]^{n-1} f'(x)$

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

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

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

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

Ejercicios

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$10(2xy-3)^4$

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

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

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

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Tarea 22/03/22

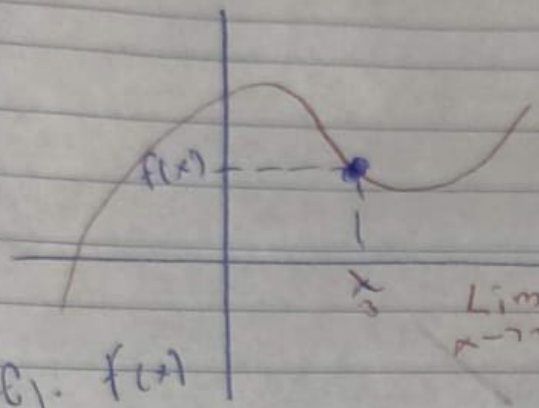
1) $f(x) = 3x2 \rightarrow 6x$
2) $f(x) = 5 \rightarrow 0$
3) $f(x) = -2x \rightarrow -2$
4) $f(x) = -2x+2 \rightarrow -2$
5) $f(x) = -2x^2+2 \rightarrow 4x$
6) $f(x) = 4x^3+6x \rightarrow 12x^2+6$
7) $f(x) = 8x^6 \rightarrow 48x^5$
8) $f(x) = 7 \rightarrow 0$
9) $f(x) = (3x^3+2x)+(6x^4+6) \rightarrow 24x^3(3x^3+2)+9x^2+2(6x^4+6)$
10) $f(x) = (8x+2)-(3x^2-x) \rightarrow 6x-1(8x+2)-(8)(3x^2-x)$
11) $f(x) = (7x^4+6x^3-5x^2+x)^3$
12) $f(x) = \frac{8x^6-6x^3-4}{2x^4}$
13) $2x^3-x^2 / 6x^2+x+2$
14) $f(x) = 78 \rightarrow 0$
15) $f(x) = (2x^3+5x^2+6x)^4$

11) $f(x) = (7x^4+6x^3-5x^2+x)^3$
$f(x) = (3)(7x^4+6x^3-5x^2+x)^{3-1}(28x^3+18x^2-10x+11)$

12) $f(x) = 8x^6-6x^3-4 / 2x^4 = 8x^3(8x^6-6x^3-4)-48x^5-18x^2(2x^4)/(2x^4)^2$

13) $f(x) = 2x^3-x^3/6x^2+x+2 = 12x+11(2x^3-x^3)-6x^2-3x^2(6x^2+x+2)/(16x^2+x+2)^2$

15) $f(x) = (2x^3+5x^2+6x)^4$
$f(x) = (4)(2x^3+5x^2+6x)^{4-1}(6x^2+10x+6)$
$f(x) = 24x^2+40x+24(2x^3+5x^2+6x)^3$



Dominio Físico.

Ej. f(x)

Ejercicios

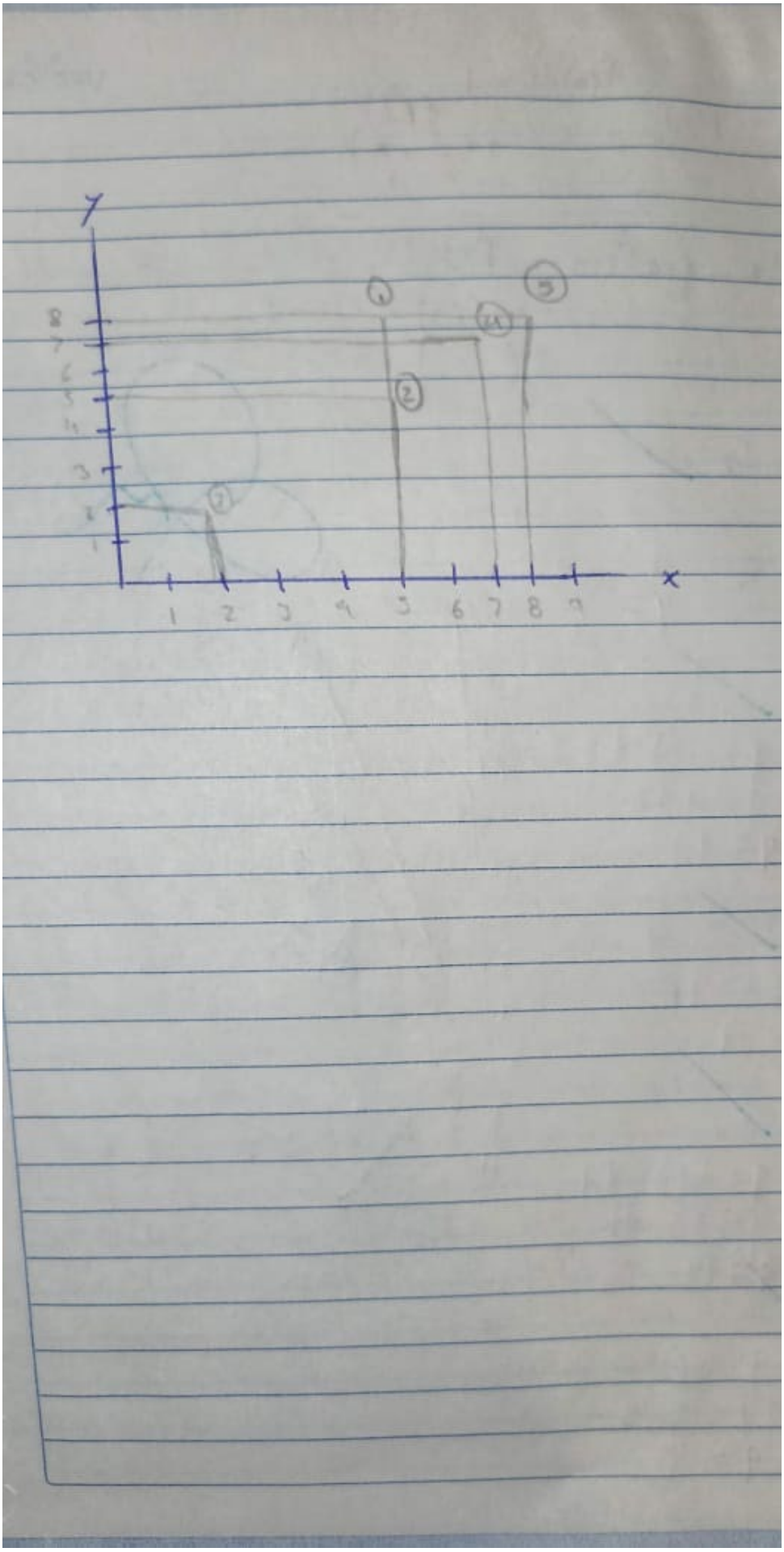
1) $(x=5x+3)$ $f(x) = 5(1)+3 = 8$

2) $(x=5x^2, f(x))$ $f(x) \; 5(1)^2 = 5$

3) $(x=2x^3, f(x))$ $f(x) \; 2(1)^3 = 2$

4) $(x=7x, f(x))$ $f(x) \; 7(1) = 7$

5) $(x=8x^2, f(x))$ $f(x) \; 8(1)^2 = 8$


y
x
8
1
2
3
4
5
6
7
8
9

VERYGREEN

$f(x) = 2x - 1$

si $f(0)$ → $P(0, \quad)$ (x, y)

si $f(1)$ → $q(1, \quad)$ (x, y)

Traza la grafica $f(x) =$

si $f(1)$ → $P(\quad)$

si $f(3)$ → $q(\quad)$

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

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

$P = 3 - 2$ $\quad q = 9 - 2$

$P = 1$ $\quad q = 7$

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

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

$P = 1 + 3$ $\quad q = 9 + 3$

$P = 4$ $\quad q = 12$

$P(1, 4)$

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

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

$P = 1$ $\quad q = -1$

4) $f(x) = 6x + 1$

$P = 6(1) + 1$ $\quad q = 6(3) + 1$

$P = 6 + 1$ $\quad q = 18 + 1$

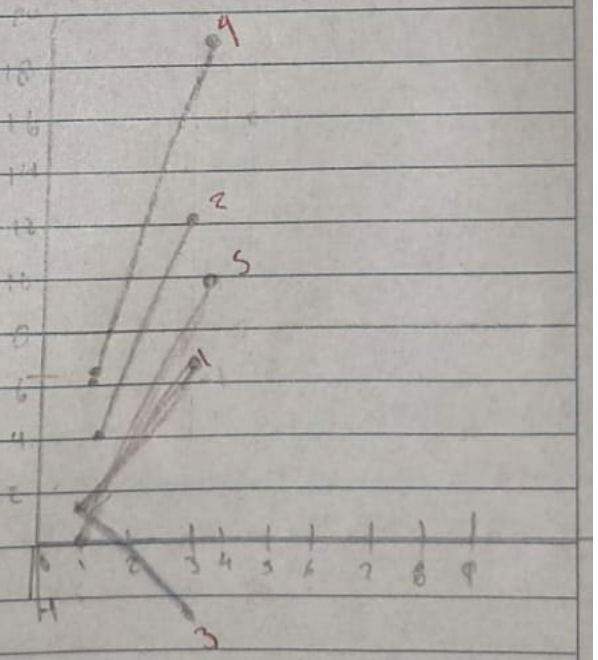
$P = 7$ $\quad q = 19$

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

$P = 5(1) - 5$ $\quad q = 5(3) - 5$

$P = 5 - 5$ $\quad q = 15 - 5$

$P = 0$ $\quad q = 10$



Cultivo No ↑ 50% c/1 hr
Entonces $N_0 = 2500$ UFC

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

$N(1) = N_0 + 0.5\,N_0 = N_0(1.5^4$
$N(2) = N_0(1.5)^2$
$N(3) = N_0(1.5)^3$

1) MO ↑ 85 c/h → 3hrs y 9 hrs =
$N_0 t(1.85) = N_0(1.85)^3 = 6.33 = 15,825$
$N_0 t(1.85) = N_0(1.85)^9 = 11.71 = 29,275$

2) MO ↑ 60% c/h → 1 hr y 5 hrs
$N_0 t(0.6) = N(1.6)^1 = 1.6 = 4000$
$N_0 t(0.6) = N(1.6)^5 = 10.48 = 26,200$

3) MO ↑ 20% c/h → 1 hr y 2 hrs
$N_0 t(0.2) = N_0(1.2)^1 = 1.2 = 3000$
$N_0 t(0.2) = N_0(1.2)^2 = 1.44 = 3,600$

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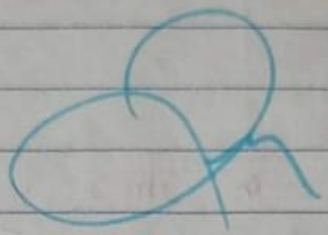
) MO ↑35% c/h → 6 hrs / 12 hrs / 24 hrs

$N_o t(0.35) = N_o(1.35)^6 = 6.05(2500) = 15,125$

$N_o t(0.35) = N_o(1.35)^{12} = 36.69(2500) = 91,600$

$N_o t(0.35) = N_o(1.35)^{24} = 1,342.79(2500) = 3,356,975$



Temperatura medida en °C y °F determinada por la igualdad $9C - 5F + 160 = 0$

Expresa en F c/f de C

$$5F = 9C + 160$$

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

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

Expresa C c/f de F

$$9C = 5F - 160$$

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

Ej.

38°C

$$F = \frac{9(38) + 160}{5} \qquad F = \frac{342}{5} + 32 =$$

$$F = 68.4 + 32 \qquad F = 100.4°F$$

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

$$C = \frac{502}{9} - 160 \qquad C = \frac{342}{9} = 38°C$$

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

1) 20° C
2) 104° F
3) 140° F
4) 37.2° C
5) 35.5° C
6) 95° F
7) -4° F
8) -5° C

1) $F = \frac{9(20) + 160}{5}$

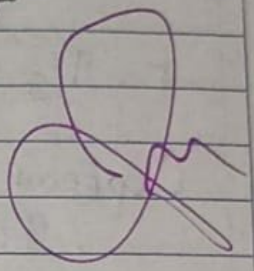
$F = \frac{180 + 160}{5}$

$F = \frac{36 + 32}{} = 68°F$

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

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

$C = \frac{180}{9} = 20°C$



2) $9C = 5(104) - 160$

$C = \frac{5(104) - 160}{9} = \frac{520 - 160}{9} = \frac{360}{9} = 40°C$

$F = \frac{9(40) + 160}{5} = \frac{360 + 160}{5} = 104°F$

3) $C = \frac{5(140) - 160}{9} = \frac{700 - 160}{9} = \frac{540}{9} = 60°C$

$F = \frac{9(60) + 160}{5} = \frac{540 + 160}{5} = \frac{700}{5} = 140°F$

4) $F = \frac{9(37.2) + 160}{5} = \frac{334.8 + 160}{5} = \frac{494.8}{5} = 98.96°F$

$C = \frac{5(98.96) - 160}{9} = \frac{494.8 - 160}{9} = \frac{334.8}{9} = 37.2°C$

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5) $F = \frac{9(35.5)+160}{5} = \frac{319.5+160}{5} = \frac{479.5}{5} = 95.9°F$

$C = \frac{5(95.9)-160}{9} = \frac{479.5-160}{9} = \frac{319.5}{9} = 35.5°C$

6) $C = \frac{5(95)-160}{9} = \frac{315}{9} = 35°C$

$F = \frac{9(35)+160}{5} = \frac{475}{5} = 95°F$

7) $C = \frac{5(-4)-160}{9} = \frac{-20-160}{9} = \frac{140}{9} = 15.55°C$

8) $\frac{9(-5)+160}{5} = \frac{-45+3}{5} = -41°F$

$= -41°F$