Derivadas

Biomatematicas

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2° A

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$F(x) = x^2$

$F'(x) = n x^{n-1}$

regla 2

1) $x^5 =$ 4) $x^{11} =$

2) $x^8 =$ 5) $x^4 =$

3) $x^9 =$

1) $F(x) = x^5$

$F'(x) = 5x^4$

$F(x) = 9x$

ejercicio x3

ejemplo

$F(x) = 3x^5$

$F'(x) = 3(5x^4)$

$15x^4$

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

2) $9x^2 = 8x$

3) $5x^3 = 15x^2$

4) $6x^4 = 24x^7$

5) $10x^2 = 20x$

1) $F(x) = 2x^6$

$F'(x) = 2(6x^5)$

$12x^5$

ejercicio regla 4

ejemplo:

$F(x) = 2x^5 \pm x$

$F(x) = 6x^2 \pm 1$

1) $9x^3 + 2x = 12x^2 + 2$

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) $12x^2 \pm 2$

2) $12x - 3$ — Por la primera regla se elimina

$12x$

(no par $C(x)$ se elimina)

ejercicios regla 5

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

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

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

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

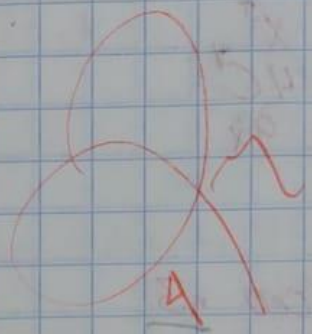
s$(20x+2)+(8x^5+6)$=
$40x^4(20x+2)-20(8x^5+6)$

ejemplo

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

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

✓



4

16/03/22

1) $4x^3 + 6x$
$12x^2 + 6$ ✓

Regla 4
$F(x) = f+g$
$F'(x) = (f+g)' = f'+g'$

2) $8x^6$
$8(6x^5)$ ✓
$48x^5$ ✓

~~Formula~~ Regla 2
$F(x) = x^2$
$F'(x) = nx^{n-1}$

3) 7
$F(x) = 7$ ✓
$F'(x) = 0$

Regla 1
$F(x) = C$
$F'(x) = 0$

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

Regla 3
$F(x) = fg + fg$
$F'(x) = fg' + f'g$

5) $(8x + 2) - (3x^2 - x)$ ✗
$6x(8x+2) - 8(3x^2 - x)$
↓
$6x - 1(8x + 2) - 8(3x^2 - x)$ ✓

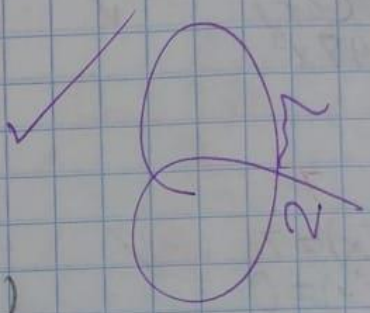
Regla 5

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

$8x^2 - 4x(7x^2 + 4x) + 14x + 14(6x^3 - 2x^2)$

7.) $(2x^3 - 4x^2) + (2x + x)$

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



8.) $(6x^4 + 2x^5) - (2x^6 + x^5)$

$12x^5 - 5x^4(6x^4 + 2x^5) - 24x^3 + 10x^4(2x^6 + 1x^5)$

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

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

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

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

22/03/23

~~Formula~~ Fo

a) $F(x) = (fg)' \quad f(x) = fg' + fg'$

b) $F(x)\left[\frac{f}{g}\right] \quad F'(x) = \frac{fg - fg'}{g^2}$

Ej

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

Ejercicios

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

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

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

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

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

Norma

Teorema: La derivada de 1 Potencia entera de 1 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

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

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

$F'(x)(3)(x+2)^2(1)$

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

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

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

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

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

$F'(x) = (5)(2xy-3)^{\quad}(2)$

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

Cultivo MO ↑ 50% c/1hr
enfonces $N_0 = 2500$ UFC
$N(t) = N(t)^h$

$N(1) = N_0 + 0.5 N_0 = N_0(1.5)^h$
$N(2) = N_0 (1.5)^2$
$N(3) = N_0 (1.5)^3$

2) MO ↑ 85% c/hr → 3 hrs y 4 hrs
$N(1) = N_0 (0.85) N_0 = N_0 (1.85)^h$
$N(3) = N_0 (0.85)^3 = 2500 (1.85)^3$
$= 2500 (6.33)$
$= 15,825$ UFC
$N(4) = N_0 (0.85)^4 = 2500 (1.85)^4$
$= 2500 (11.71)$
$= 29275$

2 MO ↑ 60% c/h → 1hr y 5hrs
$N(1) = N_0 (0.6) N_0 = N_0 (1.6)^h$
$N(1) = N_0 (1.6)^2 = 2500 (1.6)$
$= 4000$
$N(5) = N_0 (1.6)^5 = 2500 (1.6)^5$
$= 2500 (10.48)$
26200

3 MO ↑ 20% c/h → 1hr y 2 hrs
$N(1) = N_0 (1.2)^1 \rightarrow 2500 (1.2)$
$= 3000$
$N(2) = N_0 (1.2)^2 = 2500 (1.2)^2$
$= 2500 (1.44)$
$= 3600$

4) MO ↑ 35% o/n → 6 hrs / 12 hrs / 24 hrs.

$N(6) = (1.35)^6 = 2500(1.35)^6$
$= 2500(6.08)$
$= 15,125$

$N(12) = (1.35)^{12} = 2500(1.35)^{12}$
$2500(30.64)$
$91,600$

Convierte de °C a °F ó °F a °C
Según Corresponda y Comprueba

1) 20°C $\frac{9(20)+32}{5}$

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

$36+32$

$68\,°F$

2) 104°F $5(104)-160$

$520-160=\frac{360}{9}=40°C$

3) 140°F $5(140)-160$

$700-160$ $\frac{540}{9}=60\,°C$

4) 37.2°C $\frac{9(37.2)+32}{5}$

$\frac{334.8+32}{5}=98.96°F$

$66.96+32=$

5) 35.5°C $9(35.5)+32$

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

$63.9+32=95.9°F$

Norma

6) 95 °F

$5(95) - 160$

$475 - 160 = \frac{315}{9} = 35\ ^{\circ}C$

7) -4 °F

$5(-4) - 160 = \frac{-180}{9} = -20\ ^{\circ}C$

8) -5°C

$9(-5) + 32$

$\frac{(-45) + 32}{5} = 23\ ^{\circ}F$