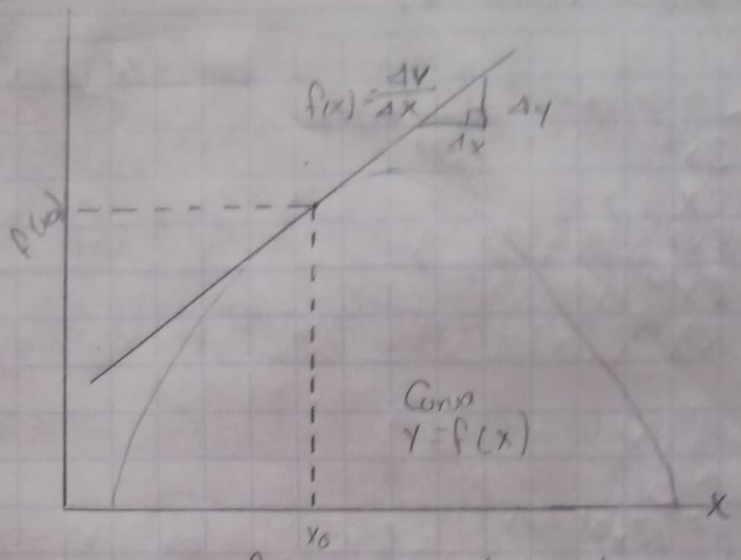
Derivadas

Biomatemáticas

Dionicio Moreno Suchiapa

2° semestre Grupo: C

Rosvani Margine Morales Irecta



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

Hb
Edad =
Hto

Reglas de la derivación

1. $f(x) = C \quad \begin{cases} f(x) = 7 \\ f'(x) = \emptyset \end{cases}$
   $f(x) = \emptyset$

2. $f(x) = x^n \quad \begin{cases} f(x) = x^5 \\ f'(x) = 5x^4 \end{cases}$
   $f'(x) = n\,x^{n-1}$

3. $f(x) = Cx \quad \begin{cases} f(x) = 3x5 = 3(5x^4) \end{cases}$
   $f'(x) = Cf'(x) = Cf'(x)$

4. $f(x) = f \pm g \quad \begin{cases} f(x)\ 2x3+x = f'(x) = 2(3x^2)+1 \\ = 6x^2+1 \end{cases}$
   $f'(x) = (f \pm g) = f' \pm g'$

5- $f(x) = fg \pm fg$ $(4x+1)(10x^2-5) = f(x)\ 20x(4x+1) + 4(10x^2-5)$

$f(x) = (fg)' = fg' \pm fg'$

Ejercicios

① $x^3 = f(x) = 3x^2$
② $x^2 = f(x) = 2x$
③ $x^8 = f(x) = 8x^7$
④ $x^{11} = f(x) = 11x^{10}$
⑤ $x^{20} = f(x) = 20x^{19}$

Ejercicios

① $4x^3 = 4(3x^2) = 12x^2$
② $5x^6 = 5(6x^5) = 30x^5$
③ $2x = 2(1) = 2$
④ $3x^3 = 3(3x^2) = 9x^2$
⑤ $8x^2 = 8(2x) = 16x$

Ejercicios

① $2x^2+3x = f(x)\ 2(2x)+3(1) = 4x+3$

② $6x-2 = f(x)\ 6(1)-2 = 6$

③ $5x^5+x^2 = f(x)\ 5(5x^4)+2(x) = 25x^4+2x$

④ $7x^2+x = 7(2x)+1 = 14x+1$

⑤ $9x^3-4x = 9(3x^2)-4(1) = 27x^2-4$

Ejercicios.

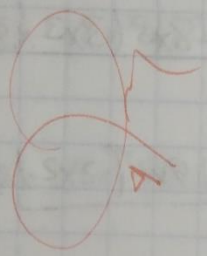
① $(4x^3-2)-(6x^2+2) = 12x(4x^3-2) - 12x^2(6x^2+2)$

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

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

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

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



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

$f(x) = \frac{4x-5}{5x^2+3x} = \frac{[10x+3(4x-5)] - [4(5x^2+8x)]}{(5x^2+3x)^2}$

Ejercicios

1.- $\frac{6x^3+4}{2x^2+3x} = \frac{[4x+3(6x^3+4)] - [18x^2(2x^2+3x)}{(2x^2+3x)^2}$

2.- $\frac{5x^5-2x^4}{3x^3-x^2} = \frac{[9x^2-2(5x^5-2x^4)] - [25x^4-8x^3(3x^3-x^2)}{(3x^3-x^2)^2}$

3.- $\frac{4x^4+3x^3}{2x^2+x} = \frac{[4x+1(4x^4+3x^3)] - [(6x^3+9x^2[2x^2+x)}{(2x^2+x)^2}$

4.- $\frac{8x^2-3}{7x} = \frac{[7(8x^2-3)] - [(16x[7x)]}{(7x)^2}$

5.- $\frac{x^7}{2x^3} = \frac{[6x^2(x^7)] - [7x^6[2x^3]]}{(2x^3)^2}$

Ejercicios

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

2- $5 = 0$ $(f(x)=C = f(x)=\emptyset)$

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

4- $-2x^2-5 = -4x$ $(f(x)=n^2 = f(x)=nx^{n-1})$

5) $2x^4+x^3-x^2-4 = 8x^3+3x^2-2x$ $(f(x)=n^2 = f(x)=nx^{n-1})$

6) $4x^3+6x = 12x^2+6$ $(f(x)=n^2 = f(x)=nx^{n-1})$

7) $8x6 = 48$ $(f(x)=n^2 = f(x)=nx^{n-1})$

8) $f(x) = 0$ $(f(x)=C = f(x)=0)$

9) $(3x^3+2x)+(6x^4+6) = 24x^3(3x^3+2x)+(9x^2+2)(6x^4+6)$
$f(x)=f\pm g = f'(x)(f'\pm g')$

10) $\frac{3x^6-6x3-4}{2x4} = \frac{[8x3(8x6-6x3-4)]-[48x^5-18x^2(2x^4)]}{(2x^4)^2}$
$f(x)=\left[\frac{f}{g}\right] = f(x)=\frac{f'g-fg'}{g^2}$