Universidad del sureste

Licenciatura en medicina Humana.

Tema: A derivar se ha dicho.

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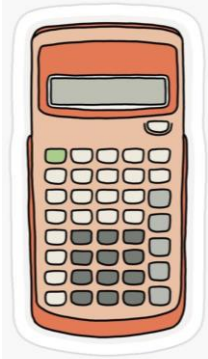
Grupo: C

Grado: 2

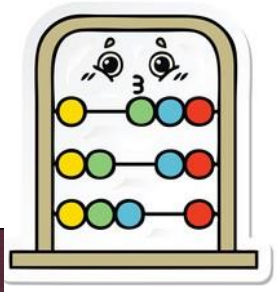
Materia: Biomatematicas .

Docente: Rosvani Margine Morales Irecta.

Comitán de Domínguez Chiapas a 19 de marzo del 2022.



DERIVADAS



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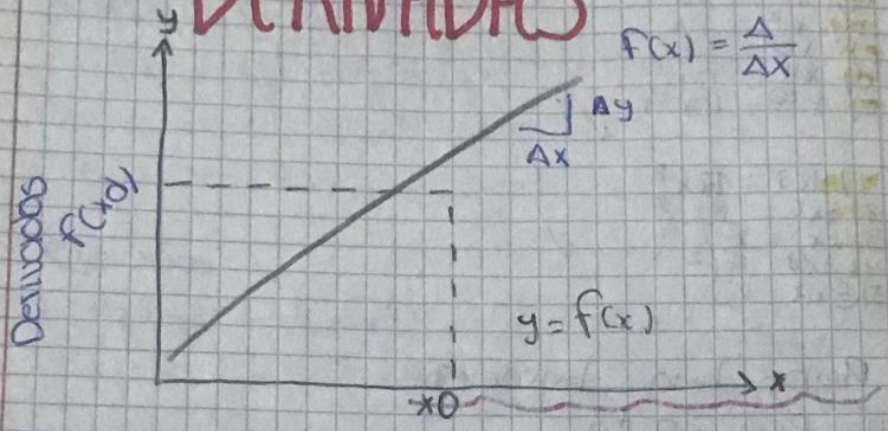
"DERIVADAS"



$f(x) = \frac{\Delta}{\Delta x}$

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

tlb -> v. dependiente
Edad -> v. independiente
tlo ->

Reglas de la derivación:

1.- $f(x) = 0$ $\quad f'(x) = 0$ $\quad f(x) = 7$ $\quad f'(x) = 0$

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

3.- $f(x) = Cx$
$f'(x) = (Cf(x) = (Cf'(x)$ $\quad f(x) = 3x^5$ $\quad f'(x) = 15x^4$

DERIVADAS

Ejercicios:

a) $x^3 = 3x^2$
b) $x^2 = 2x$
c) $x^8 = 8x^7$
d) $x^{11} = 11x^{10}$
e) $x^{20} = 20x^{19}$

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

Reglas de la derivación

4.- $f(x) = f \pm g$

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

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

1) $2x^2 + 3x = 4x + 3$
2) $6x - 2 = 6$
3) $5x^5 + x^2 = 25x^4 + 2x$
4) $7x^2 + x = 14x + 1$
5) $9x^3 - 4x = 27x^2 - 4$

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

2) $6x - 2$
$6(x) - 2$
$= 6 - 2$

3) $5x^5 + x^2$
$5(5x^4) + x^2$
$25x^4 + 2x$

4) $7x^2 + x$
$7(x^2) + x$
$14x + x$

5) $9x^3 - 4x$
$9(x^2) - 4x$
$9^2 - 4x = 27x^2 - 4$

16-03/2022

Reglas de la derivación.

5. $f(x) = fg \pm fg$

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

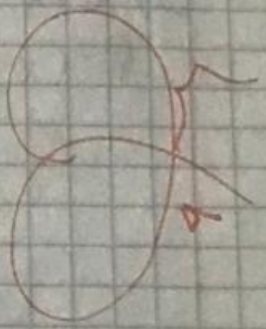
$f(x) = (4x+1)\,\pm(10x^2-5)$

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

Ejercicios:

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

$f'(x) = 8x(4x^3-2) - 4(6x^2+2)$



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

$f'(x) = 7x(3x^5+5x) + 3(7x-3)$

$3(5x^4)$

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

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

$f'(x) = 20x(5x^2-6) + 5(8x^3+4)$

Conclusión:

$f'(x)$

4) $(2x^2 - 3x) \cdot (6x - 1)$

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

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

$f'(x) = 49(7x^3 + 7) + 7(7x^2 - 7)$

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

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

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

EJERCICIOS:

1) $\frac{6x^3+4}{2x^2+3x}$

$\frac{[8x+3(6x^3+4)]}{2x^2+3x} + \frac{[6(2x^2+3x)]}{2x^2+3x}$

$\frac{[4x+3(6x^3+4)]}{2x^2+3x} - \frac{[12x^2(2x^2+3x)]}{2x^2+3x}$

2) $\frac{5x^5-2x^4}{3x^3-x^2}$

$\frac{[5-x2.(5x^2-2x^4)]}{3x^3-x^2} - \frac{[5(3x^2-x^2)]}{3x^3-x^2}$

$\frac{[9x^2-2x(5x^3-2x^4)]}{(3x^3-x^2)^2} - \frac{[15x^2(3x^3-x^2)]}{(3x^3-x^2)^2}$

3) $\frac{4x^4+3x^3}{2x^2+x}$

$\frac{[11x+1(4x^4+3x^3)]}{(2x^2+x)^2} - \frac{[60x^3+9x^2(2x^2+x)]}{(2x^2+x)^2}$

4) $\frac{8x^2 - 3x}{7x}$

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

5) $\frac{x^7}{2x^3}$

$$6x^2(x^7) - 7x^6(2x^3)$$

$$(2x^3)^2$$

Ejercicios:

1) $f(x) = 3x^2$
$f'(x) = 3x2$
$f'(x) = 2(3x^{2-1})$
$f'(x) = 6x$

Formula:
$f(x) = (x)$
$f'(x) = [x] = 1'f(x)$

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

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

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

$f(x) = (x)$
$f'(x) = [fx)] = 1f'(x)$

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

$f(x) = 2x^2 - 5$
$f'(x) = 2[2x^{2-1}] - 5$
$f'(x) = -4x$

$f(x) = f \pm g$
$f'(x) = [f \pm g]'$
$f'(x) = f' \pm g$

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

$f'(x) = 2x^4 + x^3 - x^2 - 4$
$f'(x) = 4[2x^{4-1}] + 3[x^{3-1}] - 2[x^{2-1}]$
$= 8x^3 + 3x^2 - 2x$

$f(x) = f \pm g$
$f'(x) = [f \pm g]' =$
$f' \pm g$

6) $f(x) = 4x^3 + 6x$
$f'(x) = 4x^3 + 6x$
$f'(x) = 3(4x^{3-1}) + 6[1]$
$f'(x) = [2x^2 + 6$

$f(x) = f \pm g = f'(x) = [f \pm g$
$f'(x) = f' \pm g$

Formula

$f(x) = (x)$
$f'(x) = (F(x))' = (F'(x)$

7) $f(x) = 8x^6$

$f(x) = 8x^6$
$f'(x) = 6(8x^{6-1}) = 48x^5$

8) $f(x) = 8$

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

$f(x) = 0$
$F(x) = \emptyset$

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

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

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

10) $\frac{8x^6 - 6x^3 - 4}{2x^4}$

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

$\frac{8x^6 - 6x^3 - 4}{2x^4}$

$= \frac{[8x^3(8x^6 - 6x^3 - 4) - [48x^5 - 18x^2(2x^4)}{2x^4}$

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

$(7x^2 + 4x) + 6x^3 - 2x^2)$
$(8x^2 - 4(7x^2 + 4x) + 14x + 4(5x^3 - 2x^2)$

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

formula

12) $(3x^5+6)-(8x^2-2x)$

$f(x) = fg \pm fg$

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

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

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

13) $\frac{2x^3-x^2}{6x^2+x+2}$

$\frac{2x^3-x^2}{6x^2+x+2}$

$\left[12x+1\right]\left(\frac{2x^3-x^2}{6x^2+x+2}\right) = \left[6x^2-2x(6x^2+x+2)\right]$

14) $(6x^4+2x^3)-(2x^6+x^5)$

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

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

$f(x) = fg \pm fg$

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

15) $f(x) = 78$

$f(x) = 78$ $\quad f(x) = 0$

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