Derivada es un cambio   Deanys Vera

Siempre la derivada de una constante es 0

- Regla de la potencia

  Si $f(x) = x^n$, entonces $f'(x) = n \cdot x^{n-1}$

  Ejm 1: Deriva $f(x) = x^5$
  $f'(x) = 5x^4$

  Ejm 2: Deriva $f(x) = 3x^7$
  $f'(x) = 21x^6$

- Regla de la Constante.

  Si $f(x) = c$, donde c es una constante, entonces $f'(x) = 0$

  Ejm 1: Deriva $f(x) = 7$
  $f'(x) = 0$

  Ejm 2: Deriva $f(x) = -3$
  $f'(x) = 0$

- Regla de la suma

  Si $f(x) = g(x) + h(x)$, entonces $f'(x) = g'(x) + h'(x)$

  Ejm 1: Deriva $f(x) = x^2 + 5x$
  $f'(x) = 2x + 5x$

  Ejm 2: Deriva $f(x) = 4x^3 + x^2$
  $f'(x) = 12x^2 + 2x$

- Regla del Producto

  Si $f(x) = g(x) \cdot h(x)$, entonces $f'(x) = g'(x) \cdot h(x) + g(x) \cdot h'(x)$

  Ejm 1: Deriva $f(x) = x^2 \cdot \sin(x)$
  $f'(x) = 2x \cdot \sin(x) + x^2 \cdot \cos(x)$

  Ejm 2: Deriva $f(x) = (2x+1) \cdot e^x$
  $f'(x) = 2 \cdot e^x + (2x+1) \cdot e^x$
  $f'(x) = 2e^x + 2xe^x + 1e^x$
  $f'(x) = 3ex$

Escaneado con CamScanner

Dennys Vera

Ejercicios de Miyuko

- $F''(x) = -2$

  $F''(0) = -2$

- $F(x) = 2x^3 - 4x^2$ ← Derivar

① $F'(x) = 6x^2 - 8x$

$F''(x) = 12x - 8$

② Encontrar puntos Críticos

$F'(x) = 0 \rightarrow ? = " C " \rightarrow C = \left(\frac{4}{3}, \frac{-64}{27}\right)$

$6x^2 - 8x = 0$

$x(6x - 8) = 0 \rightarrow x = 0$

$6x - 8 = 0$

$6x = +8$

$x = \frac{\cancel{8}^{4}}{\cancel{6}_{3}}$ $\quad x = \frac{4}{3}$

$F\left(\frac{4}{3}\right) = 2\left(\frac{4}{3}\right)^3 - 4\left(\frac{4}{3}\right)^2$

$F\left(\frac{4}{3}\right) = 2 \cdot \frac{64}{27} - 4 \cdot \frac{16}{9}$

$F\left(\frac{4}{3}\right) = \frac{128}{27} - \frac{64}{9} = \frac{-64}{27}$

$\frac{128}{27} - \frac{192}{27} = \frac{-64}{27}$

$\frac{128}{27} - \frac{64}{9} \cdot \frac{3}{3}$

Dennys Vera

3 Remplaza la Segunda derivada

$F''(c) = 12x - 8$

$F''\left(\frac{4}{3}\right) = 12\left(\frac{4}{3}\right) - 8$

$F''\left(\frac{4}{3}\right) = \frac{\cancel{12}^{4}}{1} \cdot \frac{4}{\cancel{3}} - 8$

$F''\left(\frac{4}{3}\right) = 16 - 8 = 8$ mim //

$C = (0,0)$

$F(0) = 2(0)^3 - 4(0)^2$

$F(0) = 0$

$F''(0) = 12(0) - 8$

$F''(0) = -8$ max

Escaneado con CamScanner

Dennys Vera

$\lim_{x \to 1} \frac{\ln x}{x-1} = \frac{0}{0}$

$f(x) : \ln(x)$ $\quad \longleftrightarrow \quad$ $g(x) : x - 1$

$f'(x) : \frac{1}{x}$ $\quad\quad$ $g'(x) : = 1$

$\lim_{x \to 1} \frac{f'(x) = \frac{1}{x}}{g'(x) = \frac{1}{1}} = \frac{1}{x}$

$\lim_{x \to 1} \frac{1}{x}$ $\quad \lim_{x \to} \frac{1}{(1)} = \boxed{1}$

$f(x) = \operatorname{Sen}(3x)$ $\quad\quad$ $g(x) = x - \frac{3}{2} \cdot \operatorname{sen}(2x)$

$f'(x) = 3 \cdot \operatorname{Cos}(3x)$ $\quad\quad$ $g'(x) = 1 - \frac{3}{2} \cdot 2 \cdot \operatorname{Cos}(2x)$

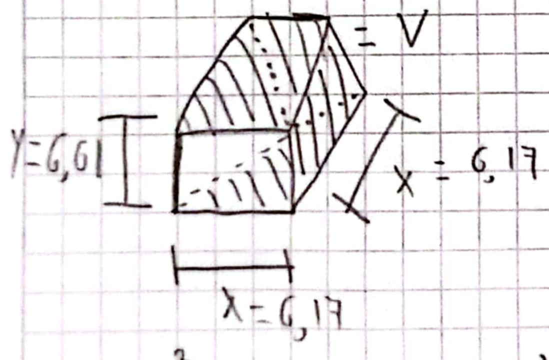
$g'(x) = 1 - 3 \operatorname{Cos}(2x)$

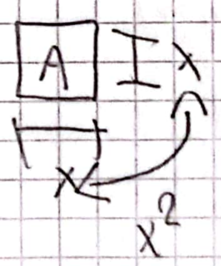
$\lim_{x \to 0} \frac{\operatorname{Sen}(3x)}{x \cdot \frac{3}{2} \operatorname{Sen}(2x)} = \frac{0}{0}$

$\lim_{x \to 0} \frac{3 \operatorname{Cos}(3x)}{1 - 3 \operatorname{Cos}(2x)}$

$\lim_{x \to 0} \frac{3 \operatorname{Cos}(3x)}{1 - 3 \operatorname{Cos}(2 \cdot 0)}$

$\lim_{x \to 0} \frac{3 \cdot 1}{1 - 3 \cdot 1} = \frac{3}{1-3} = \frac{3}{-2} = \boxed{-\frac{3}{2}}$





$A = 2$ $\quad$ AUX

$V = 3$ $\quad$ $x^2 \cdot y = 252$

$y = \frac{252}{x^2}$

$V : 252 m^3 = y \cdot x \cdot x = V = x^2 \cdot y$

$F : \square = 5 \cdot x^2$

$T : \square = 2{,}5 \cdot x^2$

$1 : \square = 3{,}5 \cdot 4 \cdot x\,y$