Sanchez [illegible]

Clases Miyako P

R. Potencia

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

Ejm: $f(x) = x^5$ $\qquad f(x) = 3x^7$

$f'(x) = 5x^4$ $\qquad f'(x) = 21x^6$

R. Constante

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

Ejm: $f(x) = 7$ $\qquad f(x) = -3$

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

R. Suma

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

Ejm: $f(x) = x^2 + 5x$ $\qquad f(x) = 4x^3 + x^2$

$f'(x) = 2x + 5$ $\qquad f'(x) = 12x^2 + 2x$

R. producto

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

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

Ejm: $f(x) = x^2 \cdot \operatorname{sen}(x)$

$f'(x) = 2x \cdot \operatorname{sen}(x) + x^2 \cdot \cos x$

Maximos y Minimos

$f(x) = -x^2$ $\qquad C = (0, 0)$

$f'x = -2x$

$f'' = -2$

$f' = -2x = 0$ $\qquad y = f(0) = -x^2$ $\qquad f'(x) = 0$ P. I $\qquad f''(x) = -2 \to P_{max}$

$x = \frac{0}{-2}$ $\qquad y = -0^2$ $\qquad f''(x) > 0 \to P_{min}$

$x = 0$ $\qquad y = 0$ $\qquad f''(x) < 0 \to P_{max}$

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

$f'x = 6x^2 - 8x$

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

$f'(x) = 6x^2 - 8x = 0$

$f'x = x(6x - 8) = 0$

$f'x = 6x - 8 = 0$

$f'x = 6x = 8$

$f'x = x = \frac{8}{6} = \frac{4}{3}$

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

$= 2 \cdot \frac{64}{27} - 4 \cdot \frac{16}{9}$

$= \frac{128}{27} - \frac{64}{9}$

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

$C = \left(\frac{4}{3}, -\frac{64}{27}\right)$

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

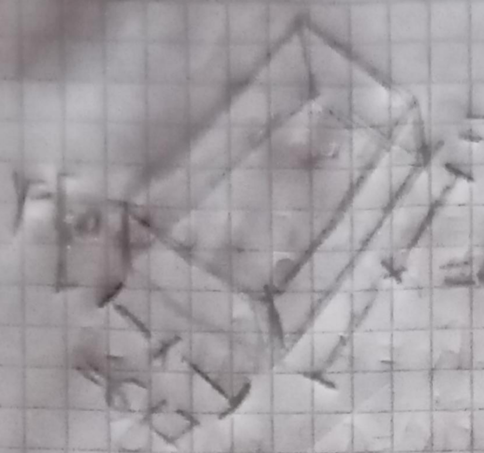
$12\left(\frac{4}{3}\right) - 8$

$4 \cdot 4 - 8$

$16 - 8$

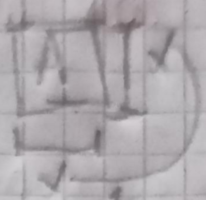
$f''(c) = 8 \to P_{min}$

Aplicaciones de la derivadas



V

$x = 6{,}17$



x^2

$A = 2$

$V = 3$

$AU\checkmark$

$x^2 \cdot y = 252$

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

$V = 252\,m^3 = y \cdot x \cdot x$

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

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

$L = \square = 3{,}5 \cdot 4 \cdot xy$

$\circ = 0$

$f(x) = 5 \cdot x^2 + 2{,}5x^2 + 14xy$

$f(x) = 7{,}5x^2 + 14x \cdot \left(\frac{252}{x^2}\right)$

$f(x) = 7{,}5x^2 + \frac{3528}{x}$

$f_1 = 15x + \left(\frac{3528}{x^2}\right)$

$f'(x) = -\frac{3528}{x^2} + 15x$

$-\frac{3528}{x^2} + 15x = 0$

$x^3 = +\frac{1176}{5}$

$-\frac{3528}{x^2} = -15x$

$\sqrt[3]{x^3} = \sqrt[3]{\frac{1176}{5}}$

$-3528 = -15x \cdot x^2$

$x = 6{,}17$

$-3528 = -15x^3$

$x^3 = \frac{3528}{15}$

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

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

$f(x) = \ln x$ $\quad g(x) = x - 1$

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

$$\lim_{x \to 1} = \frac{1}{x}$$

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

$f(x) = e^x$

$f'(x) = e^x$