

PROBLEMARIO

Nombre del Alumno: Jorge Francisco
López Gordillo

Nombre del tema: problemario

Nombre de la Materia: calculo

Nombre del profesor: Juan Jose Ojeda
Trujillo

Nombre de la Licenciatura: Bachillerato

9

~~$y = \frac{4}{x^2}$~~ $\frac{4}{0} = \frac{1}{8}$

$y + dy = \frac{4}{(x + dx)^2}$

$y + dy = \frac{4}{x^2 + 2x dx + dx^2}$

$y + dy - y = \frac{4}{x^2 + 2x dx + dx^2} - \frac{4}{x^2}$

$dy = \frac{4x^2 - (4x^2 + 8x dx + 4 dx^2)}{x^4 + 2x^3 dx + x^2 dx^2}$

$dy = \frac{-8x dx - 4 dx^2}{x^4 + 2x^3 dx + x^2 dx^2}$ $\frac{dy}{dx} = \frac{-8x}{x^3}$

$\frac{dy}{dx} = \frac{-8x dx - 4 dx^2}{(x^4 + 2x^3 dx + x^2 dx^2) dx}$ $\frac{dy}{dx} = \frac{-8}{x^3}$

$\frac{dy}{dx} = \frac{-8x - y dx}{x^4 + 2x^3 dx + x^2 dx^2}$

Lim $\rightarrow 0$

5

$$y = (a - bx)^2$$

$$(a - bx)(a - bx)$$

$$\begin{array}{r} a^2 - abx \\ - abx + b^2x \\ \hline a^2 - 2abx + b^2x^2 \end{array}$$

$$y + Dy = a^2 - 2ab(x + Dx) + b^2(x + Dx)^2$$

$$y + Dy = a^2 - 2abx + 2abDx + b^2x^2 + 2b^2xDx + b^2Dx^2$$

$$-y \quad -a^2 + 2abx \quad -b^2x^2$$

$$Dy = \frac{2abDx}{Dx} + \frac{2b^2xDx}{Dx} + \frac{b^2Dx^2}{Dx}$$

$$\frac{Dy}{Dx} = 2ab + 2b^2x + b^2 \cdot 2x$$

Lim

$Dx \rightarrow 0$

$$\frac{Dy}{Dx} = 2ab + 2b^2x$$

$$y = (1 + 2x)^2$$

$$\frac{d}{dx}$$

$$(1 + 2x)(1 + 2x)$$

$$1 + 2x$$

$$2x + 4x^2$$

$$1 + 4x + 4x^2$$

$$\uparrow \quad \uparrow$$

$$y + Dy = 1 + 4(x + Dx) + 4(x + Dx)^2$$

$$y + Dy = 1 + 4x + 4xDx + 4x^2 + 4x \cdot Dx + 4x^2$$

$$y = 4x + 4x^2$$

$$\frac{Dy}{Dx} = \frac{4xDx}{Dx} + \frac{4x^2}{Dx}$$

$$\frac{Dy}{Dx} = 4x + 4x + 4x^2$$

$$\frac{Dy}{Dx} = 8x + 4x^2$$

$$8 : y = \frac{2-x}{x-2}$$

$$y + D^2y = \frac{2-x}{x-2} - \left(\frac{2-x}{x-2} \right)$$

$$Dy = -2x - 9 + x^2 + 2x - xDx - 2Dx - 2x - x^2 + 2Dx - xDx - 4 - 3x$$

$$x^2 - 2x + xDx - 2Dx - 2x + 4$$

$$Dy = \frac{-4 - xDx - 2Dx + xDx - 4}{x^2 - 2x + xDx - 2Dx - 2x + 4}$$

$$Dy = \frac{-8 - 2Dx}{x^2 - 4x + xDx - 2Dx} = Dx$$

$$Dy = \frac{10}{x^2 - 4x + xDx - 2Dx}$$

$$Dy \rightarrow 0 \quad \frac{Dy}{Dx} = \frac{-10}{x^3}$$

$$\textcircled{1} 2x^2 - 3x + 9$$

$$y + Dy = 2(x + Dx)^2 - 3(x + Dx) + 9$$

$$y + Dy = x^2 + 3x^2 Dx + 3x Dx^2 + Dx^3$$

$$y + Dy = 2x^2 + 6x^2 Dx + 6x Dx^2 + 2Dx^3 - 3x + 3Dx + 9$$

$$\begin{array}{r} y + Dy \\ - y \\ \hline Dy = 6x^2 Dx + 6x Dx^2 + 2Dx^3 - 3x + 3Dx + 9 - y \end{array}$$

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

$\frac{Dy}{Dx}$

$$\frac{Dy}{Dx} = 6x^2 - 3$$

$$\lim_{Dx \rightarrow 0} \frac{Dy}{Dx} = 6x^2 - 3$$

$$\textcircled{2} y = \frac{x+2}{x} = \frac{x}{x} + \frac{2}{x}$$

$$y = 1 + \frac{2}{x}$$

$$-y + y + Dy = \frac{1}{1} + \frac{2}{x + Dx} = \left(\frac{1}{1} + \frac{2}{x} \right)$$

$$-y + y + Dy = 1 + \left(\frac{2}{x + Dx} \right) - 1 + \left(\frac{2}{x} \right)$$

$$\frac{-2}{x + Dx} - \frac{2}{x} = \frac{2x - 2x + 2Dx}{x^2 + xDx}$$

$$\frac{Dy}{Dx} = \frac{-2 Dx}{x^2 + xDx (Dx)}$$

$$\frac{Dy}{Dx} = \frac{-2}{x^2}$$

$$\frac{Dy}{Dx} = \frac{-2}{x^2 + xDx}$$

lim

$$y = \frac{2}{x^2 + 4}$$

$$y = \frac{2}{(x+Dx)^2 + 4}$$

$$-4 + 1 Dy = \frac{2}{x^2 + 2x Dx + Dx^2 + 4} - \frac{2}{x^2 + 4}$$

$$Dy = \frac{2x^2 + 8 - 2x^2 - 4xDx - 2Dx^2 - 8}{x^4 + 2x^3 Dx + x^2 Dx^2 + 4x^2 + 4x^2 + 8xDx + 40x^2 + 4}$$

$$\frac{Dy}{Dx} = \frac{-4x Dx - 2Dx^2}{(x^4 + 2x^3 Dx + x^2 Dx^2 + 4x^2 + 4x^2 + 8xDx + 40x^2 + 16) Dx}$$

$$\frac{Dy}{Dx} = \frac{-4x - 2Dx}{x^4 + 2x^3 Dx + x^2 Dx^2 + 8x^2 + 8xDx + 4Dx^2 + 16}$$

$Dx \rightarrow 0$

$$\frac{Dy}{Dx} = \frac{-4x}{x^4 + 8x^2 + 16}$$

$$y = \frac{5}{9+x^2}$$

$$y+Dy = \frac{5}{(9+x^2+Dx)^2} - \frac{5}{9+x^2}$$

$$Dy = \frac{20+8x^2 - 20 + 5(x+Dx)^2}{16+4(x+Dx)^2 + 9x^2 + x^2(x+Dx)^2}$$

$$Dy = \frac{5x^2 - (5x^2 + 10xDx + 5Dx^2)}{16+4(x+Dx)^2 + 9x^2 + x^2(x+Dx)^2}$$

$$\frac{Dy}{Dx} = \frac{10xDx + 5Dx^2}{16+4(x+Dx)^2 + 9x^2 + x^2(x+Dx)^2}$$

$$Dy = \frac{10x}{16+4x+8xDx+4Dx^2+9x^2+x^4+2x^3Dx+Dx^2}$$

$$Dy = \frac{10x}{16+8x^2+8xDx+4Dx^2+x^4+2x^3Dx+Dx^2}$$

Lim $\rightarrow 0$

$$\frac{Dy}{Dx} = \frac{10x}{16+8x^2+x^4}$$