

$$y = 2x^3 - 6x^2 - 7x + 11$$

$$y = 2(x^3 - 3x^2\Delta x + 3x\Delta x^2 + \Delta x^3) - 6(x^2 + 2x\Delta x + \Delta x^2) - 7(x + \Delta x) + 11$$

$$y = 2x^3 + 6x\Delta x + 6x\Delta x^2 + 2\Delta x^3 - 6x^2 - 12x\Delta x - 6\Delta x^2 - 7x - 7\Delta x + 11 - 2x^3 + 6x^2 + 7x + 11$$

$$y + \frac{\Delta y}{\Delta x} = 6x\frac{\Delta x}{\Delta x} + 6x\frac{\Delta x}{\Delta x} + 2\frac{\Delta x}{\Delta x} - 12x\frac{\Delta x}{\Delta x} + 6\frac{\Delta x}{\Delta x} - 7\frac{\Delta x}{\Delta x} + 11$$

$$\frac{\Delta y}{\Delta x} = 6x^2 + 6x\Delta x + 2\Delta x^2 - 12x - 6\Delta x - 7$$

$$\frac{\Delta y}{\Delta x} = 6x^2 - 12x - 7$$

$$\left(\frac{11}{4x^3} \right) \rightarrow \frac{7}{3x^2}$$

$$y + \Delta y = \frac{11}{4(x + \Delta x)^3}$$

$$y + \Delta y = \frac{11}{4(x^3 + 3x^2\Delta x + 3x\Delta x^2 + \Delta x^3)}$$

$$-y + y + \Delta y = \frac{11}{4x^3 + 12x^2\Delta x + 12x\Delta x^2 + 4\Delta x^3} - \frac{11}{4x^3}$$

$$\Delta y = \frac{\cancel{44x^3} - 132x^2\Delta x - 132x\Delta x^2 - 44\Delta x^3}{(4x^3 + 12x^2\Delta x + 12x\Delta x^2 + 4\Delta x^3)(4x^3)}$$

$$\frac{\Delta y}{\Delta x} = \frac{-132x^2\Delta x - 132x\Delta x^2 - 44\Delta x^3}{(4x^3 + 12x^2\Delta x + 12x\Delta x^2 + 4\Delta x^3)(4x^3)}$$

$$\frac{\Delta y}{\Delta x} = \frac{-132x^2 - 44}{(4x^3)^2}$$

$$\frac{11}{4x^3} \times \frac{7}{5x^2}$$

$$y = \Delta y = \frac{7}{3(x + \Delta x)^2}$$

$$y = \Delta y = \frac{7}{3(x^2 + 2x\Delta x + \Delta x^2)}$$

$$-y + y + \Delta y = \frac{7}{3(x^2 + 2x\Delta x + \Delta x^2)}$$

$$\Delta y = \frac{21x^2 - 21x^2 - 42x\Delta x - 21\Delta x^2}{(3x^2 + 6x\Delta x + 3\Delta x^2)(3x^2)}$$

$$\frac{\Delta y}{\Delta x} = \frac{-42x\Delta x - 21\Delta x^2}{(3x^2 + 6x\Delta x + 3\Delta x^2)(3x^2)}$$

$$\frac{\Delta y}{\Delta x} = \frac{-42x - 21\Delta x}{(3x^2 + 6x\Delta x + 3\Delta x^2)(3x^2)}$$

$$\frac{\Delta y}{\Delta x} = \frac{-42x}{3x^2}$$

$$\frac{\Delta y}{\Delta x} = \frac{-14x}{x^2} = \frac{-14}{x}$$

$$y = 11 - 2x^2 - 6x^2$$

$$y = 11 - 2x^2 - 2 \times \Delta x - 2 \Delta x^2 - 6x^3 - 6x^2 \Delta x - 6x \Delta x^2 - 6 \Delta x^3$$

$$\frac{\Delta y}{\Delta x} = -4x \Delta x - 2 \Delta x^2 - 18x^2 \Delta x - 18x \Delta x^2 - 6 \Delta x^3$$

$$\frac{\Delta y}{\Delta x} = -4x - 2 \Delta x - 18x^2 - 18x \Delta x - 6 \Delta x^2$$

$$\frac{\Delta y}{\Delta x} = -4x - 18x^2$$

y

$$y = \frac{x}{(x^2 - 8x)} = \frac{x}{x(x-8)} = \frac{1}{x+8}$$

$$y = \frac{1}{(x + \Delta x) + 8}$$

$$y = \frac{1}{x + \Delta x + 8} - \frac{1}{x + 8}$$

$$= \frac{x + 8 - x - \Delta x}{(x + \Delta x + 8)(x + 8)}$$

$$= \frac{-\Delta x}{(x - \Delta x + 8)(x + 8)}$$

$$\frac{\Delta x}{(x + \Delta x + 8)(x + 8)}$$

$$\frac{1}{(x+8)^2}$$

$$y = \frac{5}{3x-4}$$

$$y = \frac{5}{3x+3\Delta x-4} - \frac{5}{3x-4}$$

$$\frac{15x - 20 + 15x + 15\Delta x - 20}{(3x+3\Delta x-4)(3x-4)}$$

$$y + \frac{\Delta y}{\Delta x} = \frac{15\Delta x}{(3x+3\Delta x-4)(3x-4)}$$

$$\frac{\Delta y}{\Delta x} = \frac{15}{(3x+3\Delta x-4)(3x-4)}$$

$$\frac{\Delta y}{\Delta x} = \frac{15}{(3x-4)^2}$$

$$y = \frac{5}{3x-4}$$

$$y = \frac{5}{3x+3\Delta x-4} - \frac{5}{3x-4}$$

$$\frac{15x - 20 + 15x + 15\Delta x - 20}{(3x+3\Delta x-4)(3x-4)}$$

$$y + \frac{\Delta y}{\Delta x} = \frac{15\Delta x}{(3x+3\Delta x-4)(3x-4)}$$

$$\frac{\Delta y}{\Delta x} = \frac{15}{(3x+3\Delta x-4)(3x-4)}$$

$$\frac{\Delta y}{\Delta x} = \frac{15}{(3x-4)^2}$$

$$y = \frac{3x+2}{2x-1}$$

$$y = \frac{3x+3\Delta x+2}{2x+2\Delta x-1} - \frac{3x+2}{2x-1}$$

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

$$\frac{\Delta y}{\Delta x} = \frac{4\Delta x+3\Delta x}{(2x+2\Delta x-1)(2x-1)}$$

$$\frac{\Delta y}{\Delta x} = \frac{4+3}{(2x+2\Delta x-1)(2x-1)}$$

$$\frac{\Delta y}{\Delta x} = \frac{7}{(2x-1)}$$

$$y = \frac{3x^2 + 2}{2x}$$

$$y + \Delta y = \frac{3(x + \Delta x)^2 + 2}{2(x + \Delta x)}$$

$$= \frac{3(x^2 + 2x\Delta x + \Delta x^2) + 2}{2x + 2\Delta x}$$

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

$$\Delta y = \frac{6x^3 + 12x^2\Delta x + 6x\Delta x^2 + 4x - 6x^3 - 6x^2\Delta x - 4x - 4\Delta x}{(2x + 2\Delta x)(2x)}$$

$$\frac{\Delta y}{\Delta x} = \frac{12x^2\Delta x + 6x\Delta x^2 - 6x^2\Delta x - 4\Delta x}{(2x + 2\Delta x)(2x)}$$

$$\frac{\Delta y}{\Delta x} = \frac{12x^2 + 6x\Delta x - 6x^2 - 4}{(2x + 2\Delta x)(2x)}$$

$$\frac{\Delta y}{\Delta x} = \frac{12x^2 - 6x^2 - 4}{(2x)^2}$$

$$y = \frac{5}{(4+x^2)}$$

$$y = \frac{5}{4+(x+\Delta x)^2}$$

$$\Delta y = \frac{5}{4+(x+\Delta x)^2} - \frac{5}{4+x^2}$$

$$\Delta y = \frac{20 + 5x^2 - 5(4+x^2 + 2x\Delta x + \Delta x^2)}{(4+(x+\Delta x)^2)(4+x^2)}$$

$$\Delta y = \frac{20 + 5x^2 - 20 - 5x^2 - 10x\Delta x - 5\Delta x^2}{(4+(x+\Delta x)^2)(4+x^2)}$$

$$\frac{\Delta y}{\Delta x} = \frac{-10x - 5\Delta x}{(4+(x+\Delta x)^2)(4+x^2)}$$

$$\frac{\Delta y}{\Delta x} = \frac{-10x - 5\Delta x}{(4+(x+\Delta x)^2)(4+x^2)}$$

$$\frac{\Delta y}{\Delta x} = \frac{-10x}{(4+x^2)^2}$$

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

$$y = 1 + 4x$$

$$y = 1 + 4x + 4\Delta x$$

$$y = 4\Delta x - \Delta x$$

$$\frac{\Delta y}{\Delta x} = 4$$

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$$y = \frac{3}{5x} - \frac{3}{4x} + \frac{1}{8}$$

$$x = \frac{-3}{4x}$$

$$x + \Delta x = \frac{-3}{4x + 4\Delta x} - \frac{3}{4x}$$

$$\Delta y = \frac{12x - 12x - 12\Delta x}{(4x + 4\Delta x)(4x)}$$

$$\frac{\Delta y}{\Delta x} = \frac{12\Delta x}{(4x + 4\Delta x)(4x)}$$

$$\frac{\Delta y}{\Delta x} = \frac{12}{(4x)^2}$$