

$$\begin{aligned}
 & y = 2x^3 - 6x^2 - 9x + 11 \\
 & 2(1+\Delta x)^3 - 6(1+\Delta x)^2 - 9(1+\Delta x) + 11 \\
 & 2(1 + 3\Delta x + 3\Delta x^2 + \Delta x^3) - 6(1 + 2\Delta x + \Delta x^2) - 9(1 + \Delta x) + 11 \\
 & 2 + 6\Delta x + 6\Delta x^2 + 2\Delta x^3 - 6 - 12\Delta x - 6\Delta x^2 - 9 - 9\Delta x + 11 \\
 & 2\Delta x^3 + 6\Delta x^2 - 12\Delta x + 6\Delta x^2 - 9\Delta x + 11 - 11 \\
 & 2\Delta x^3 + 12\Delta x^2 - 21\Delta x
 \end{aligned}$$

$$\frac{\Delta y}{\Delta x} = \frac{2\Delta x^3 + 12\Delta x^2 - 21\Delta x}{\Delta x} = 2\Delta x^2 + 12\Delta x - 21$$

$$\lim_{\Delta x \rightarrow 0} \frac{\Delta y}{\Delta x} = 2(0)^2 + 12(0) - 21 = -21$$

$$\frac{\Delta y}{\Delta x} = 6x^2 + 6x\Delta x + 2\Delta x^2 - 12x + 6\Delta x - 21$$

$$\lim_{\Delta x \rightarrow 0} \frac{\Delta y}{\Delta x} = -21$$

$$\frac{\Delta y}{\Delta x} = 6x^2 + 12x - 21$$

$$2 + y = \frac{11}{4x^3} - \frac{19}{8x^2}$$

$$y + \Delta y = f(x + \Delta x)$$

$$y + \Delta y = \frac{11}{4(x + \Delta x)^3} - \frac{19}{8(x + \Delta x)^2}$$

$$-y + y + \Delta y = \frac{\Delta y}{4x^3 + 12x^2 \Delta x + 12x \Delta x^2 + 4 \Delta x^3} - \frac{19}{24x^3} - \frac{11}{24x^3}$$

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

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

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

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

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

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

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

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

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

$$\Delta y = \frac{2\Delta x(x + \Delta x) - (x^2 + 2\Delta x(x + \Delta x))}{3x^2(x^2 + 2\Delta x(x + \Delta x))} \quad \left[ \frac{\Delta y}{\Delta x} \right]$$

$$\frac{\Delta y}{\Delta x} = \frac{-42x\Delta x - 2\Delta x^2}{3x^2 + 6\Delta x(x + \Delta x)} \quad \left[ \frac{\Delta y}{\Delta x} \right]$$

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

$$\frac{\Delta y}{\Delta x} = \frac{-42x}{3x^2} \quad \left[ \frac{\Delta y}{\Delta x} \right]$$

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

$$y = 11 - 2(x^2 + 2x\Delta x + 4x^2) - 6(x^3 + 3x^2\Delta x + 3x\Delta x^2 + 10x^3)$$

$$y = 11 - 2x^2 - 4x\Delta x - 2\Delta x^2 - 6x^3 - 18x^2\Delta x - 6\Delta x^3 - 60x^3$$

$$y = 11 - 2x^2 - 4x\Delta x - 2\Delta x^2 - 66x^3 - 18x^2\Delta x - 6\Delta x^3$$

$$\Delta y = 4x - 12\Delta x + 18x^2 + 18x\Delta x + 6\Delta x^2 \quad \lim_{\Delta x \rightarrow 0}$$

$$\frac{\Delta y}{\Delta x} = 4 - 12 + 18x^2$$

$$y = \frac{1}{x^2 - 8x} + 18$$

$$y = \frac{1}{x(x-8)} + 18$$

$$y = \frac{1}{x(x-8)} + 18$$

$$y = \frac{1}{x(x-8)} + 18$$

$$y = \frac{1}{x(x-8)} + 18$$

$$y = \frac{1}{x(x-8)} + 18$$

$$y = \frac{1}{x(x-8)} + 18$$

$$y = \frac{1}{x(x-8)} + 18$$

$$y = \frac{1}{x(x-8)} + 18$$

$$y = \frac{1}{x(x-8)} + 18$$

$$y = \frac{1}{x(x-8)} + 18$$

$$y = \frac{1}{x(x-8)} + 18$$

URBAK

$$\frac{5y+5}{(3x-4)}$$

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

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

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

$$y + \Delta y = \frac{(5x + 20) - (15x + 15\Delta x + 20)}{(3x + 3\Delta x - 4)(3x - 4)}$$

$$y + \Delta y = \frac{5x + 20 - 15x - 15\Delta x - 20}{(3x + 3\Delta x - 4)(3x - 4)}$$

$$\frac{\Delta y}{\Delta x} = \frac{-5x - 15\Delta x}{(3x + 3\Delta x - 4)(3x - 4)} \quad \left[ \frac{D}{dx} \right]$$

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

$$\frac{\Delta y}{\Delta x} = \lim_{x \rightarrow 0} \frac{-15}{(3x - 4)^2}$$

$$6 \div Y = \frac{3x+2}{2x-1}$$

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

$$\frac{6x+6x-3x+9x+10x}{2x-1} \div \frac{6x+6x-9x-3x-3}{2x-1}$$

$$\frac{\Delta Y}{\Delta X} = \frac{9x+3}{2x-1}$$

$$\frac{\Delta Y}{\Delta X} = \frac{4+3}{2x-1} = \frac{7}{2x-1}$$

$$\frac{\Delta Y}{\Delta X} = \frac{1+7}{2x-1} = \frac{8}{2x-1}$$

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

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

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

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

$$\Delta y = 6x \cdot 3 + 12x^2 \Delta x + 6x \Delta x^2 - 14x - 6x - 3 \cdot \frac{2\Delta x^2}{2x} - 4\Delta x$$

$$\Delta y = 12x^2 \Delta x + 6x \Delta x^2 - 6x \Delta x - 4\Delta x$$

$$\Delta y = (2x^2 + 2\Delta x)(2x) - 6x \Delta x - 4\Delta x$$

$$\Delta y = 12x^2 - 6x - 4$$

$$(2x^2 + 2\Delta x)(2x)$$

$$8 = y - \frac{5}{4+x^2}$$

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

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

$$\Delta y = 20 + 8x^2 - 5(4+x^2 + 2x\Delta x + \Delta x^2) - \frac{4+(x+\Delta x)^2}{4+x^2}$$

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

$$\Delta y = -\Delta x \left( \frac{10x-5\Delta x}{4+x^2} \right) \quad \stackrel{!}{=} \Delta x$$

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

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



$$y = (1.2x)^2$$

$$y = 1.44x$$

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

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

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

.....

$$y = 3 - 4x + 18$$

$$y = -3$$

$$4x$$

$$y + \Delta y = -3 - 3 + 4x$$

$$\Delta y = 12x - 12 - 12\Delta x \div \Delta x$$

$$\frac{\Delta y}{\Delta x} = -12 - 12\Delta x$$

$$\frac{\Delta y}{\Delta x} = -12$$

$$\frac{\Delta y}{\Delta x} = \frac{30x - 12}{(5x-2)^2} - \frac{12}{(4x)^2}$$