

S.E.

$$m = \frac{y-8}{0-1} = \frac{y-8}{-1}$$

$$m = \frac{8-0}{1-x} = \frac{8}{1-x}$$

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

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

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

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

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

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

$$L^2 = a^2 + b^2$$

$$L^2 = x^2 + y^2$$

$$L^2 = x^2 + \left(\frac{8x}{x-1}\right)^2$$

$$L^2 = x^2 + \frac{64x^2}{(x-1)^2}$$

$$2L' = 2x + \frac{(x-1)^2(128x) - 2(x-1)(64x^2)}{(x-1)^4}$$

$$2L' = 2x + \frac{128x(x-1)(x-1-x)}{(x-1)^4}$$

$$2L' = 2x + \frac{-128x}{(x-1)^3}$$

$$2L' = 2x - \frac{128x}{(x-1)^3}$$

$$L' = x - \frac{64x}{(x-1)^3}$$

$$0 = \frac{x(x-1)^3 - 64x}{(x-1)^3}$$

$$x = 5$$

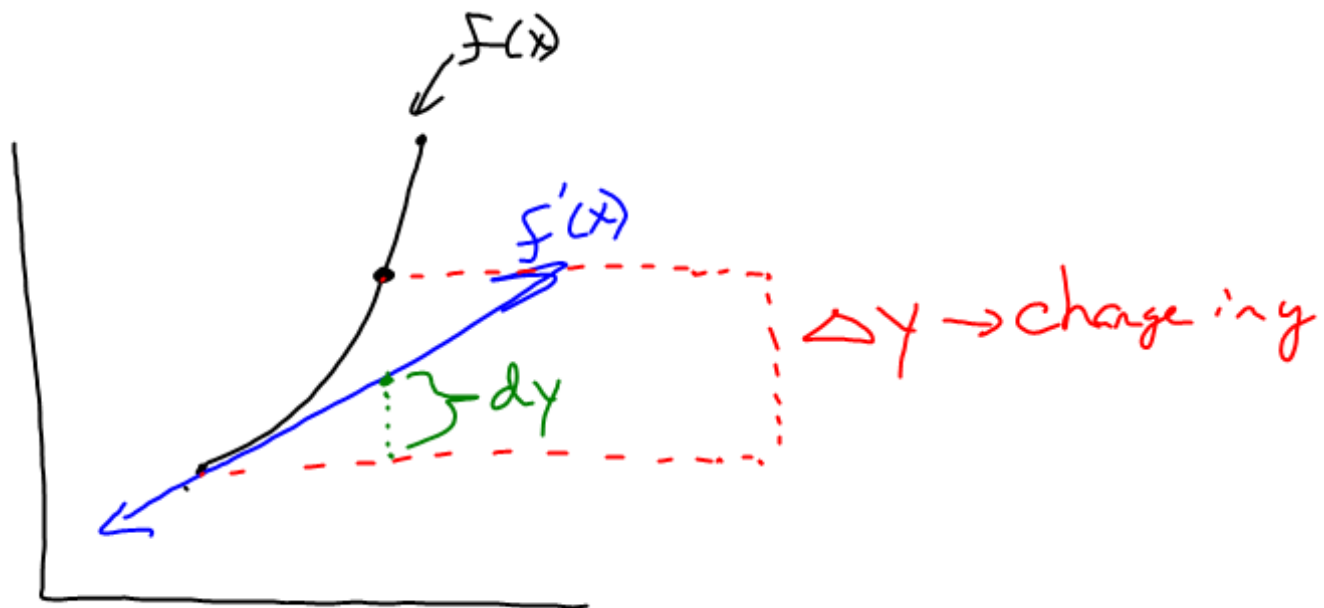
$$(0, 0) (5, 0) (0, 10)$$

3.9 D: Differentials

$$y = f(x)$$

$$\frac{dy}{dx} = f'(x)$$

$$dy = f'(x)dx$$



Ex 1 Determine the change in
 the function $y = x^{2/3}$ when
 x decreases from 8 to 7.8.
 * Find change in y
 $\Delta y \approx dy$

$$x = 8$$

$$\Delta x = dx = -.2$$

$$y = x^{2/3}$$

$$\frac{dy}{dx} = \frac{2}{3} x^{-1/3}$$

$$dy = \frac{2}{3 x^{1/3}} dx$$

$$dy = \frac{2}{3\sqrt[3]{8}} (-.2)$$

$$dy \approx -\overline{.066}$$

Review: pg 223 #s:
4,5,9,11,22

