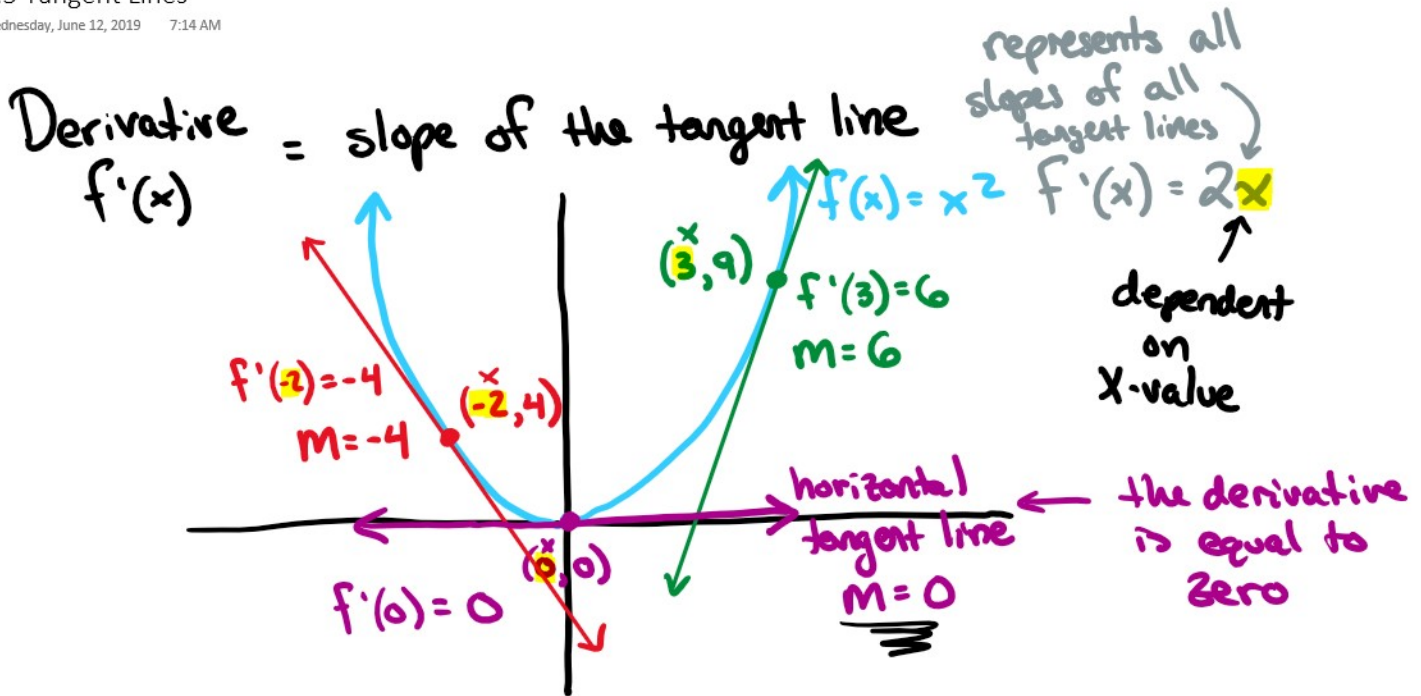


3.3 Tangent Lines

Wednesday, June 12, 2019 7:14 AM



① Calculate the slope of the tangent line to $f(x) = 6x^2 - 5x + 2$ at the point $(1, 3)$.

$$f'(x) = 12x - 5 \rightarrow f'(1) = 12(1) - 5 = \boxed{7}$$

② Write the equation of the tangent line.

$$y = mx + b \rightarrow y = 7x + b \rightarrow \boxed{y = 7x - 4}$$

$$3 = 7(1) + b$$

$$-4 = b$$

③ Find the points at which $f(x) = 2x - \frac{12}{x} - 6$ has a tangent line with a slope of 5 .

$$f'(x) = 2 + 12x^{-2}$$

$$f(2) = -8 \quad f(-2) = -4$$

$$5 = 2 + \frac{12}{x^2} \rightarrow 3 = \frac{12}{x^2} \rightarrow 3x^2 = 12 \rightarrow x^2 = 4$$

$$\boxed{(2, -8) \text{ and } (-2, -4)}$$

$$\boxed{x = \pm 2}$$

$(2, -8)$ and $(-2, -4)$

$$x = \pm 2$$