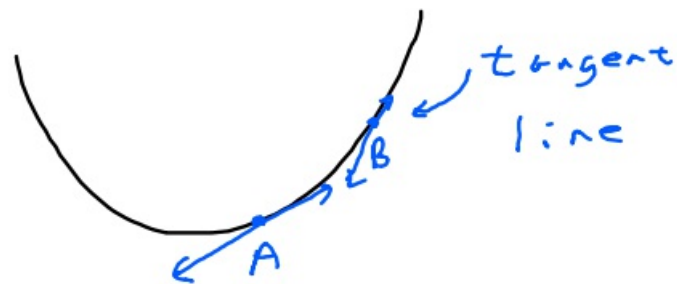
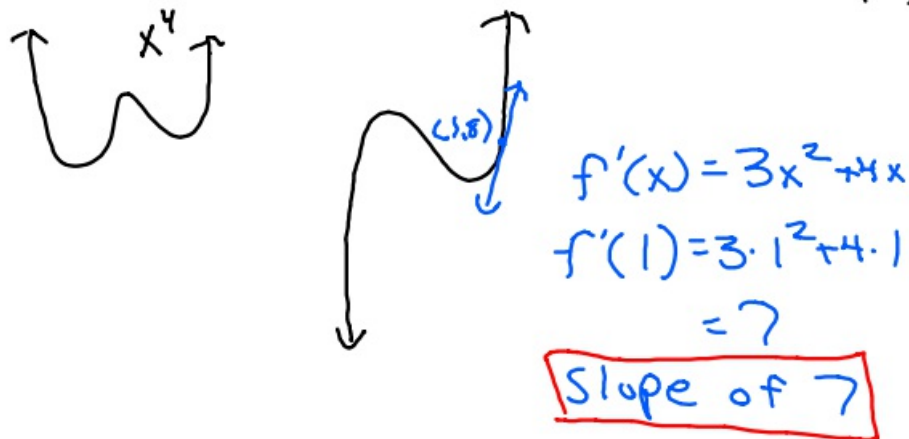


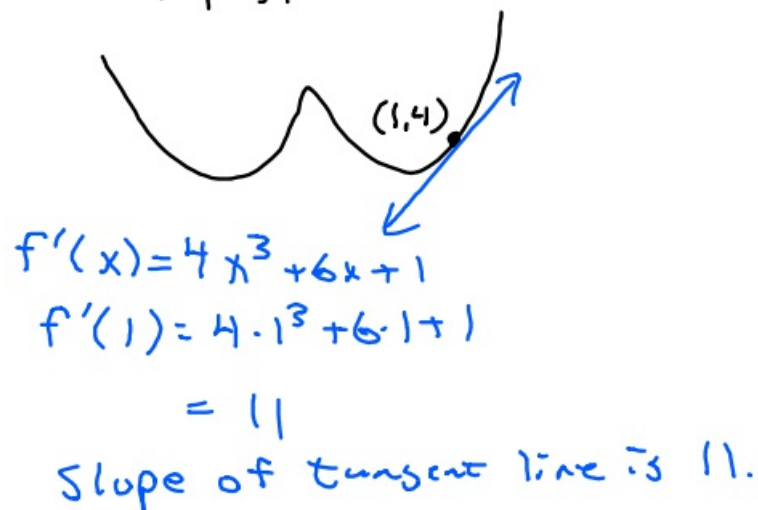
1-23-20 4<sup>th</sup> Trig



- ① What is the slope of the line tangent to  $f(x) = x^3 + 2x^2 + 5$  at  $(1, 8)$ ?



- ② Give the slope of the line tangent to  $f(x) = x^4 + 3x^2 + x - 1$  at  $(1, 4)$ .



- ③ Give the equation of the line tangent to  
 $f(x) = x^3 + 3x^2 + x + 5$   
 at  $(1, 10)$



$$f'(x) = 3x^2 + 6x + 1$$

$$f'(1) = 3 \cdot 1^2 + 6 \cdot 1 + 1$$

$$= 10$$

$$m = 10 \quad \text{point } (1, 10)$$

$$y - y_1 = m(x - x_1)$$

$$y - 10 = 10(x - 1)$$

$$y - 10 = 10x - 10$$

$$\begin{array}{r} +10 \quad +10 \\ \hline y = 10x \end{array}$$

- ④ Give the equation of the line tangent to  $f(x) = x^3 - 6x$   
 at  $(2, -4)$ .



$$f'(x) = 3x^2 - 6$$

$$f'(2) = 3 \cdot 2^2 - 6$$

$$= 6$$

$$\text{slope} = 6 \quad (2, -4)$$

$$y - y_1 = m(x - x_1)$$

$$y - (-4) = 6(x - 2)$$

$$y + 4 = 6x - 12$$

$$\begin{array}{r} -4 \quad -4 \\ \hline y = 6x - 16 \end{array}$$

- ⑤ Give the equation of the line tangent to  
 $f(x) = x^4 + 3x^2 - 1$   
 at  $(1, 3)$ .



$$f'(x) = 4x^3 + 6x$$

$$f'(1) = 4 \cdot 1^3 + 6 \cdot 1$$

$$\text{slope} = 10 \quad (1, 3)$$

$$y - y_1 = m(x - x_1)$$

$$y - 3 = 10(x - 1)$$

$$y - 3 = 10x - 10$$

$$\begin{array}{r} +3 \quad +3 \\ \hline y = 10x - 7 \end{array}$$