

3.1 Derivative as a function

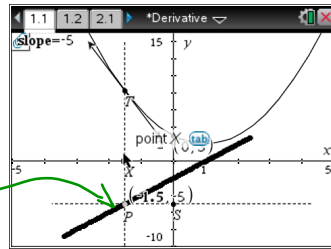
use calc program derivative

Drag point X. What do you notice about point P?

it's y value is the same as the slope of the tangent line

derivative: Slope equation

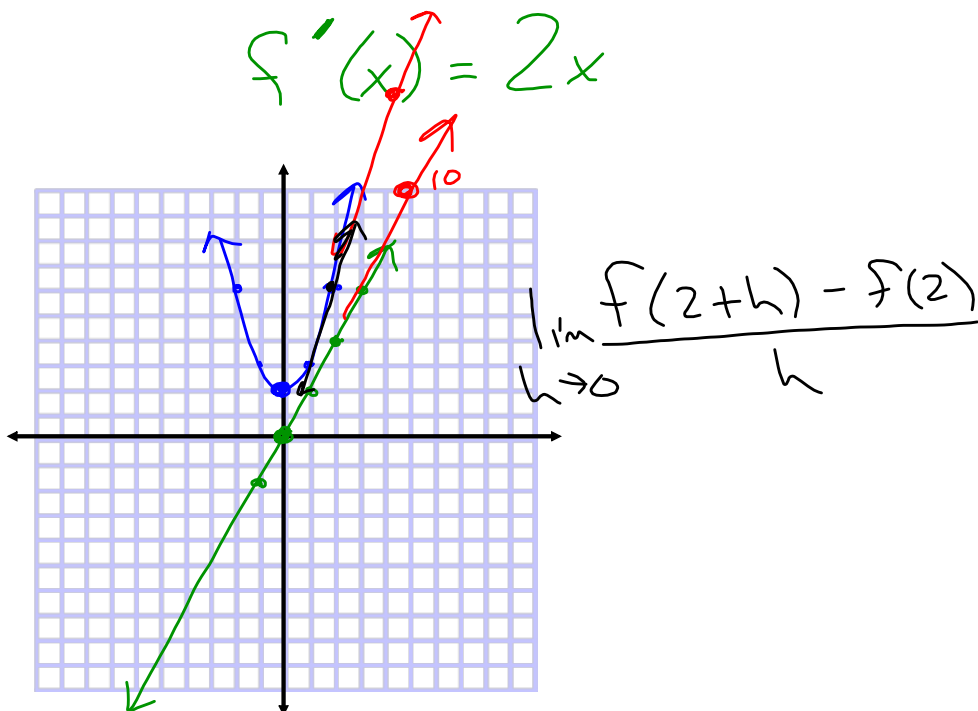
* the line is the slope equation for the parabola



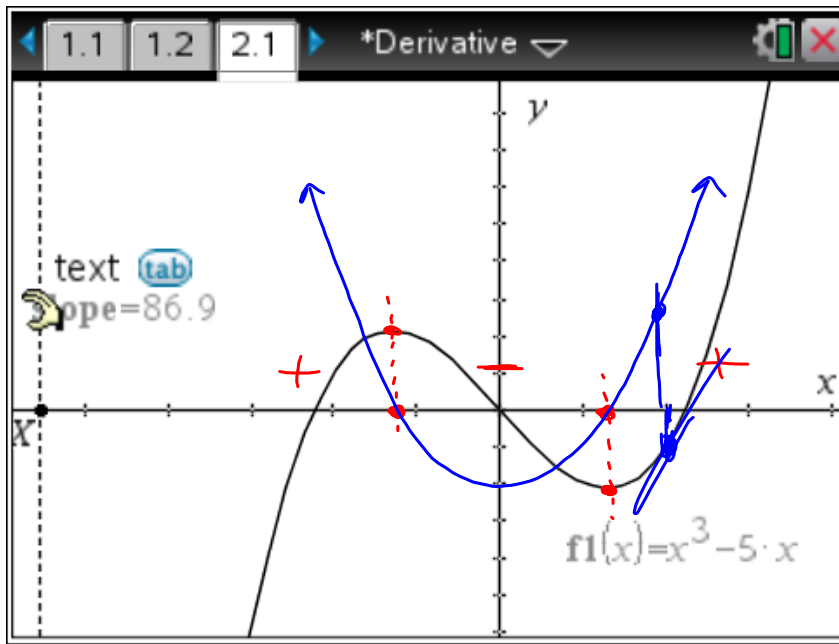
derivative by definition:

$$f(x) = x^2 + 2$$

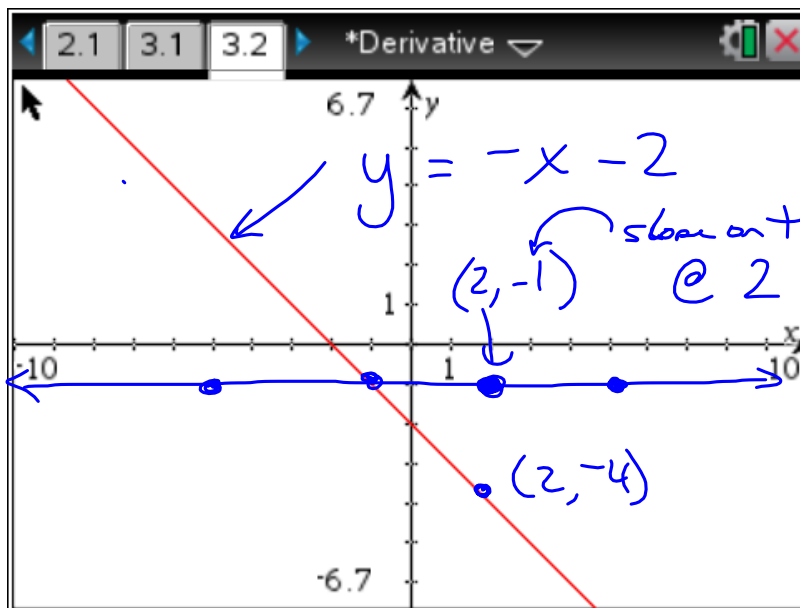
$$f'(x) = 2x$$

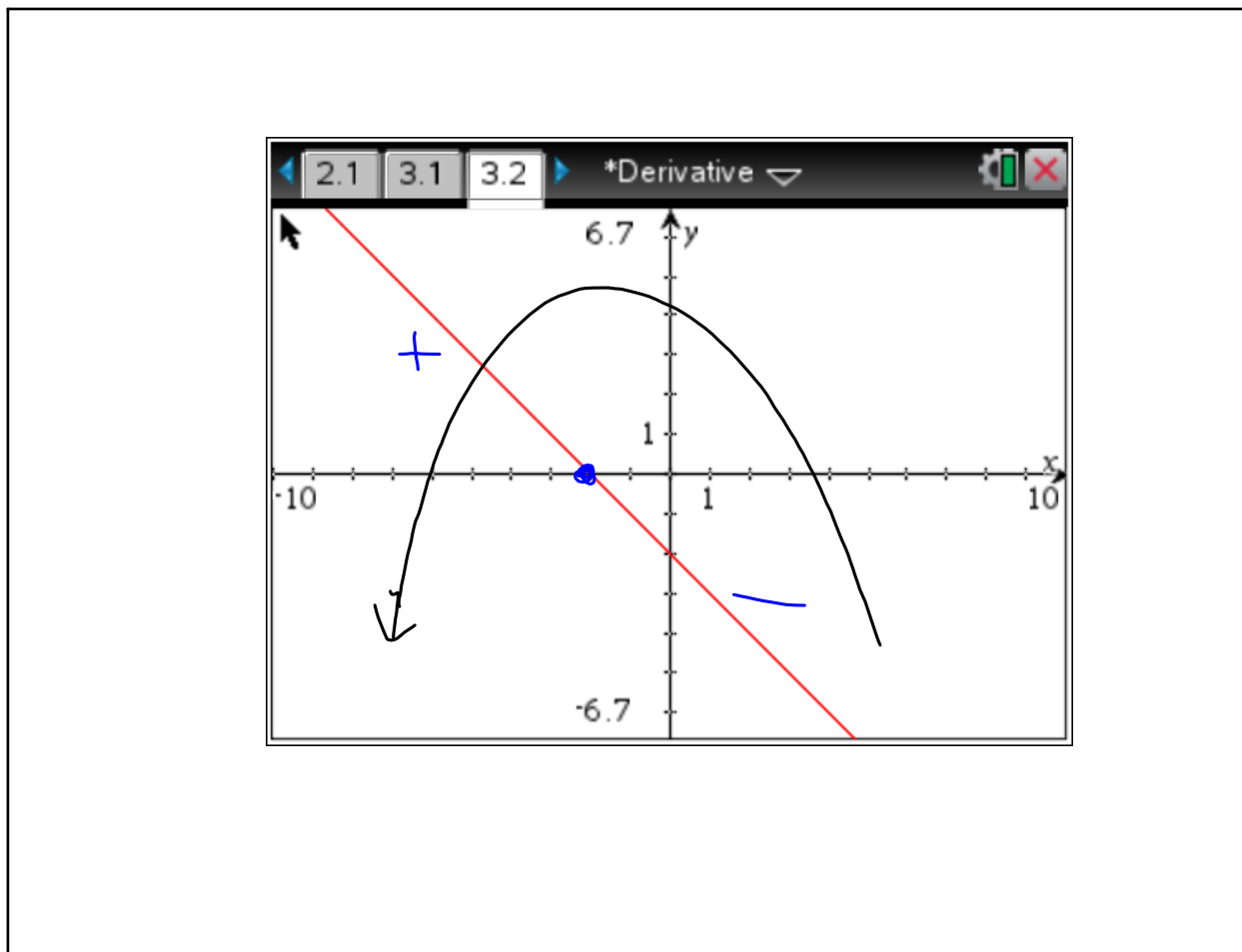


sketch the derivative (slope function)

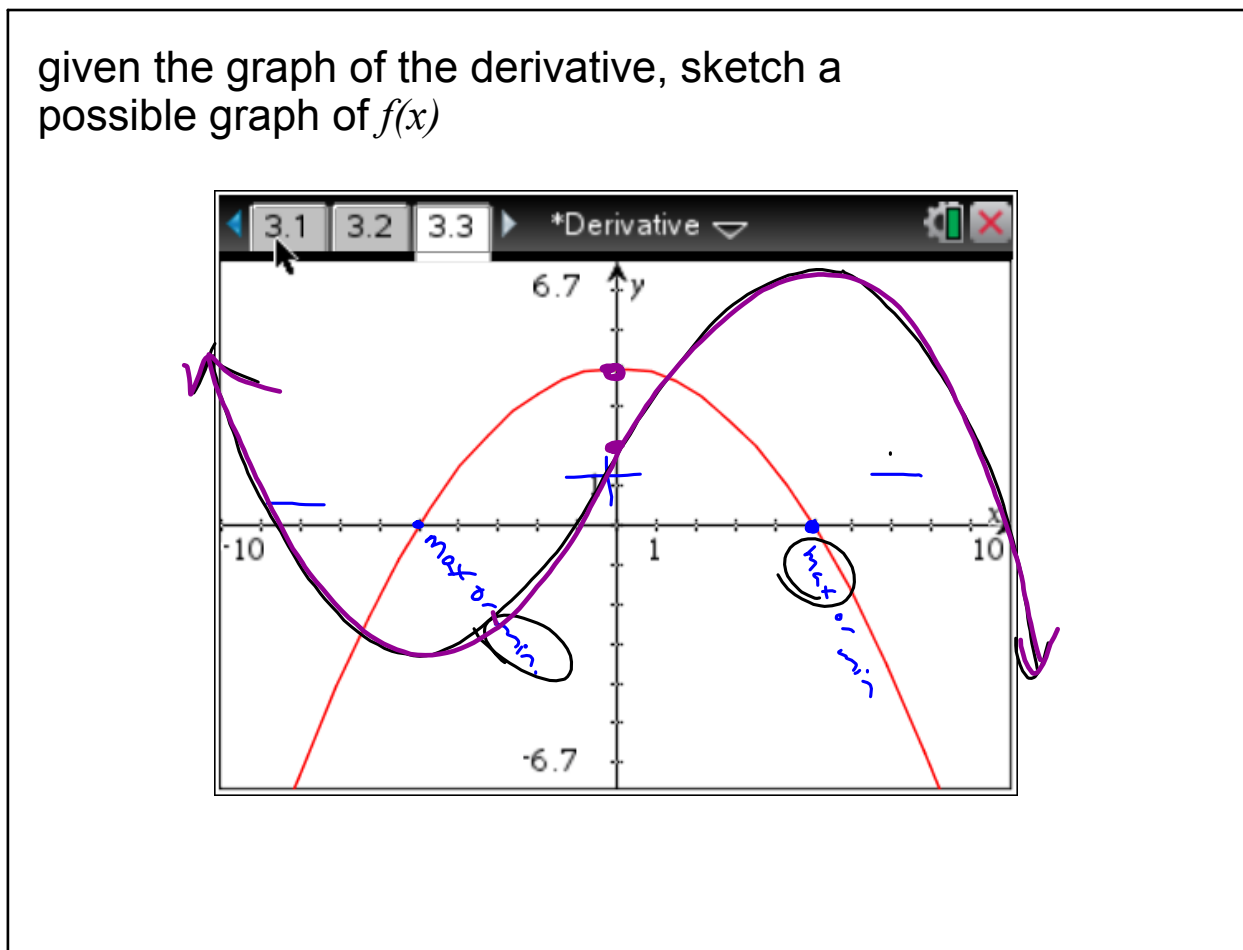


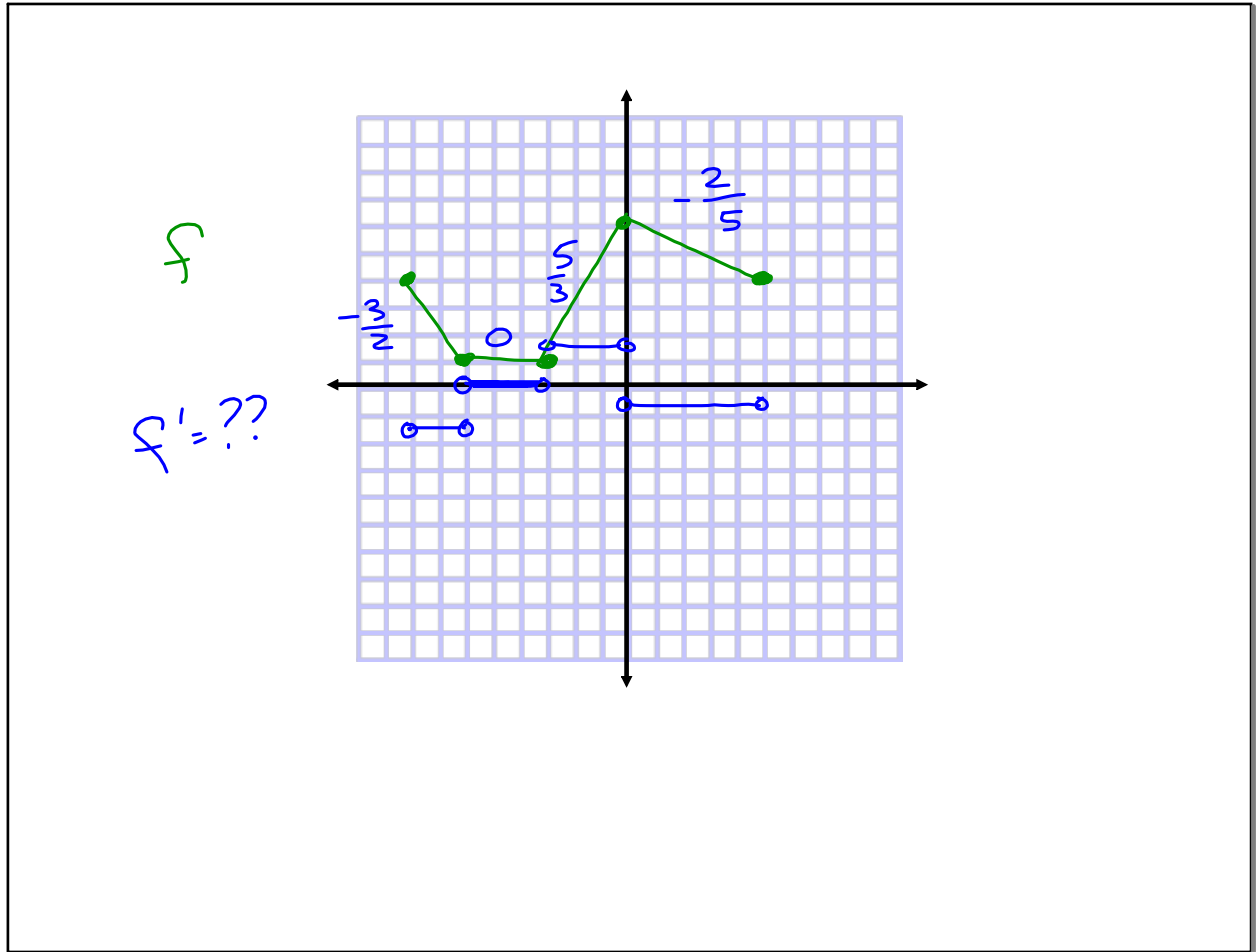
given the graph of the derivative, sketch a possible graph of $f(x)$





given the graph of the derivative, sketch a possible graph of $f(x)$





derivative notation:

$$y = x^2 + 2$$

$$y' = 2x$$

$$\frac{dy}{dx} = 2x$$

$$f(x) = x^2 + 2$$

$$f'(x) = 2x$$

$$\frac{d}{dx}(x^2 + 2) = 2x$$

with respect to x
in terms of x