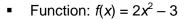


## **Vocabulary: Graphs of Derivative Functions**

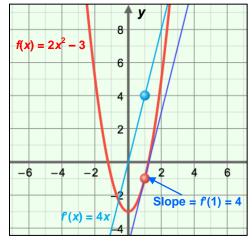
## Vocabulary

- Derivative the slope of the tangent line at a given point on a graph.
  - The derivative of f(x) is defined as  $f(x) = \lim_{\Delta x \to 0} \frac{f(x + \Delta x) f(x)}{\Delta x}$ .
    - This means that f(x) is the slope of the line between two points on a curve, as the distance between those points  $(\Delta x)$  goes to zero.
    - f(x) is usually called "f prime" or "f prime of x."
  - The derivative is the rate of change of the function at a given point.
    - In other words, the derivative describes how quickly *f*(*x*) (or *y*) is changing, relative to *x*.
  - For example, the derivative of the quadratic function graphed to the right is f(x) = 4x, so the slope of the tangent line at x = 1 is f(1) = 4(1), or 4.



• Derivative: 
$$f(x) = 4x$$

• Derivative at 
$$x = 1$$
:  $f(1) = 4(1) = 4$ 



o The process of finding the derivative is called *differentiation*.