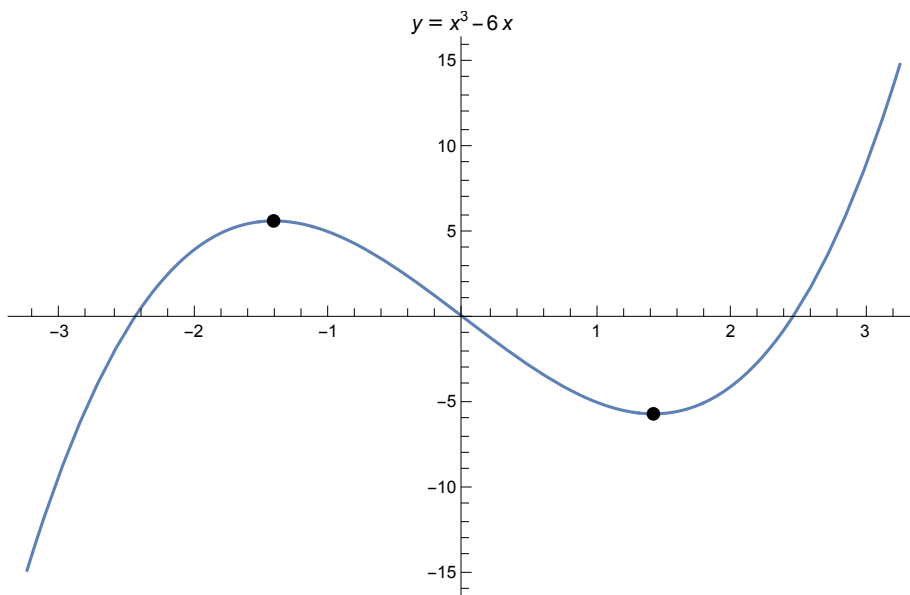


## Points of Interest

The figure shows of the graph of a cubic function, which has two points marked that stand out as special features. We can't read the exact coordinates of the points from the graph, but we can solve to find them (with a little work).



- Use the graph to determine the *sign* (positive, negative, or zero) of the following quantities:
  - $f(-3)$
  - $f(-1)$
  - $f(0)$
  - $f(1)$
  - $f(3)$
- And determine the sign of the following as well (just visually - no calculations needed):
  - $f(-3)$
  - $f'(-1)$
  - $f'(0)$
  - $f'(1)$
  - $f'(3)$
- What about the slope of the tangent lines at the two marked points: positive, negative, or zero?
- On separate paper, set up and evaluate a limit to find a formula for the derivative,  $f'(x)$ .  
This will take a little time. But copy your result here for reference:

$$f'(x) = \underline{\hspace{4cm}}$$

5. Write an equation that describes the condition: "The slope of the tangent line at  $x$  is 0".  
Solve the equation to find all values of  $x$  that satisfy this condition.

6. Find the exact coordinates of the two marked points on the graph.  
(Simplify as much as possible, but give exact answers)