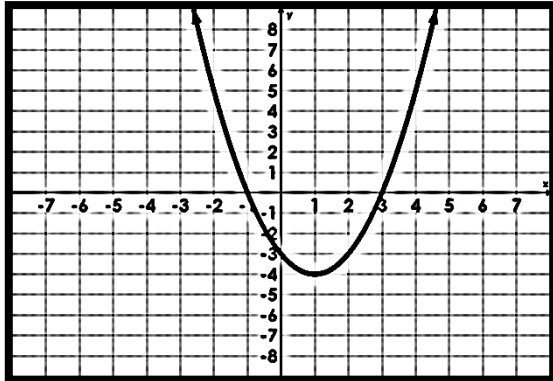


Name \_\_\_\_\_

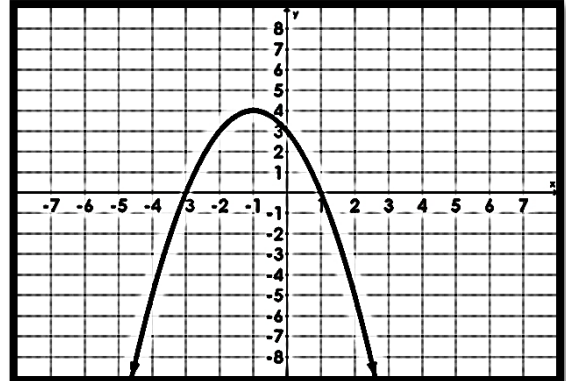
Date \_\_\_\_\_

## More Characteristics of Quadratics and Graphing in Standard Form

Graph 1



Graph 2



**Interval of Increase:** The part of the graph that is rising as you read from **left to right** on the x-axis (What part of the graph goes uphill?)

Graph 1: \_\_\_\_\_

Graph 2: \_\_\_\_\_

**Interval of Decrease:** The part of the graph that is falling as you read from **left to right** on the x-axis. (What part of the graph goes downhill?)

Graph 1: \_\_\_\_\_

Graph 2: \_\_\_\_\_

**End Behavior:** Behavior of the graph of  $f(x)$  ( $y$ -values) as  $x$  approaches positive infinity (heading to the right) or negative infinity (heading to the left). What direction are the **ends** of the function going?? End behavior is written as:

As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.

As  $x \rightarrow \infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.

Graph 1: As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_. As  $x \rightarrow \infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.

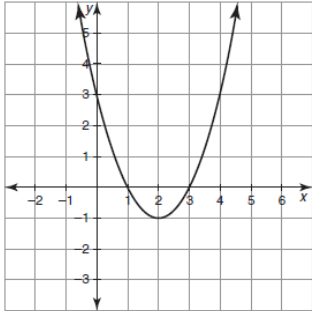
Graph 2: As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_. As  $x \rightarrow \infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.

## Calculating Average Rate of Change

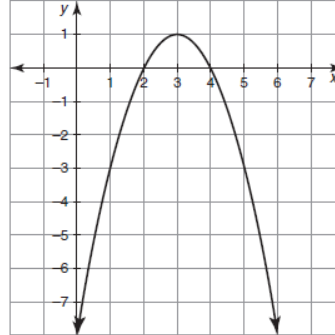
The average rate of change is the slope of the line that passes through these two points.

Remember slope is:  $\frac{\text{rise}}{\text{run}}$  or  $\frac{Y_2 - Y_1}{X_2 - X_1}$

Calculate average rate of change on interval  $0 \leq x \leq 2$ .



Calculate average rate of change on interval  $x = 0$  to  $x = 3$

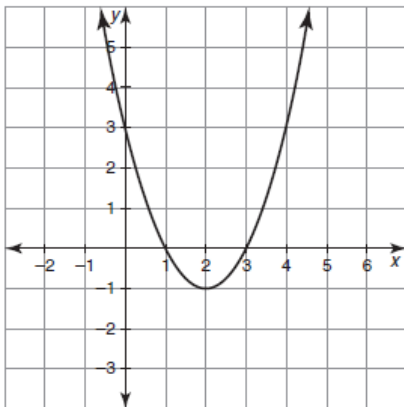


Calculate the average rate of change of the function  $y = (x - 4)^2$  on the given intervals:

$$1 \leq x \leq 3$$

$$-2 \leq x \leq 2$$

**Practice:** Describe the characteristics of the following graphs:



**Transformations:** \_\_\_\_\_

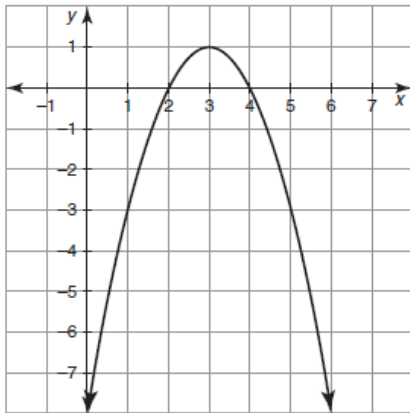
**Vertex:** \_\_\_\_\_ **Equation:** \_\_\_\_\_

**Interval of Increase:** \_\_\_\_\_ **Interval of Decrease:** \_\_\_\_\_

**End Behaviors:** As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.

As  $x \rightarrow \infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.

**Average Rate of Change from  $x = 2$  to  $x = 4$**  \_\_\_\_\_



Transformations: \_\_\_\_\_

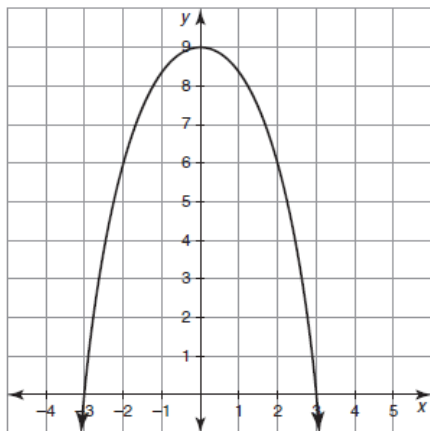
Vertex: \_\_\_\_\_ Equation: \_\_\_\_\_

Interval of Increase: \_\_\_\_\_ Interval of Decrease: \_\_\_\_\_

End Behaviors: As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.

As  $x \rightarrow \infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.

Average Rate of Change from  $1 \leq x \leq 2$  \_\_\_\_\_



Transformations: \_\_\_\_\_

Vertex: \_\_\_\_\_ Equation: \_\_\_\_\_

Interval of Increase: \_\_\_\_\_ Interval of Decrease: \_\_\_\_\_

End Behaviors: As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.

As  $x \rightarrow \infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.

Average Rate of Change from  $0 \leq x \leq 2$  \_\_\_\_\_

### Graphing Quadratics in Standard Form

1) Graph  $y = 2x^2 + 6x + 1$

1. Label your  $a$ ,  $b$ , and  $c$ .

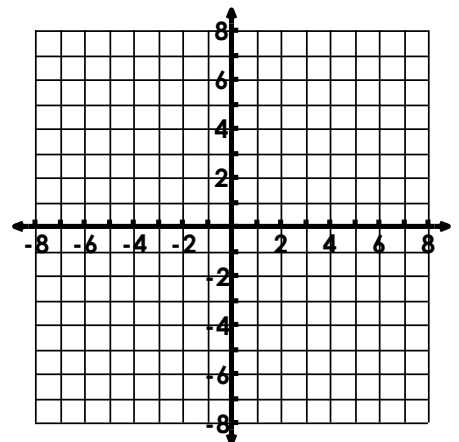
2. Find the vertex using  $x = \frac{-b}{2a}$

and then **substitute** that value into the equation to find the  $y$ .

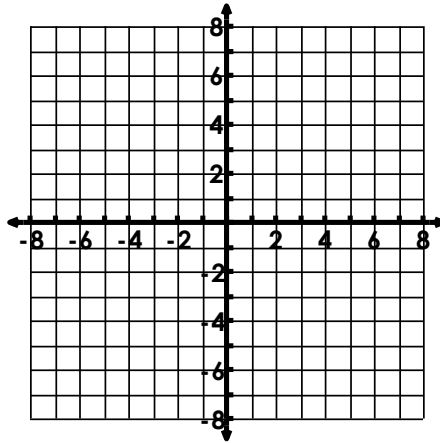
3. Draw the axis of symmetry.

4. Create an  $xy$ -table (VERTEX IN THE MIDDLE!)

5. Draw a parabola through points.



2) Graph  $y = x^2 - 6x + 8$



Vertex: \_\_\_\_\_

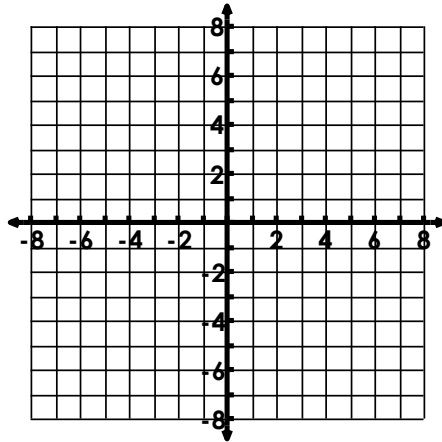
Interval of Increase: \_\_\_\_\_

Interval of Decrease: \_\_\_\_\_

End Behaviors: As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.As  $x \rightarrow \infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.Average Rate of Change from  $4 \leq x \leq 5$ 

\_\_\_\_\_

3) Graph  $f(x) = -x^2 + 4x - 6$



Vertex: \_\_\_\_\_

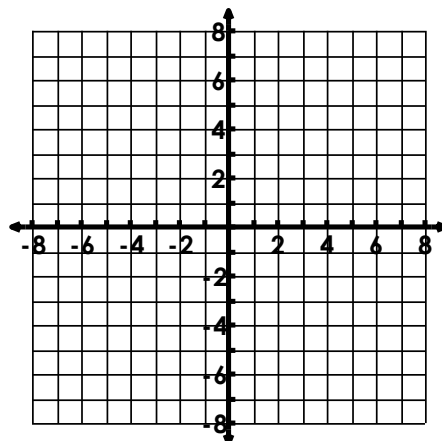
Interval of Increase: \_\_\_\_\_

Interval of Decrease: \_\_\_\_\_

End Behaviors: As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.As  $x \rightarrow \infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.Average Rate of Change from  $x = 3$  to  $x = 4$ 

\_\_\_\_\_

4) Graph  $f(x) = 2x^2 + 4x - 3$



Vertex: \_\_\_\_\_

Interval of Increase: \_\_\_\_\_

Interval of Decrease: \_\_\_\_\_

End Behaviors: As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.As  $x \rightarrow \infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_.Average Rate of Change from  $-3 \leq x \leq -1$ 

\_\_\_\_\_