



**LEARNING
OUTCOMES**

- I can identify the intercepts, local maximums and minimums, and the line of symmetry of a quadratic function.

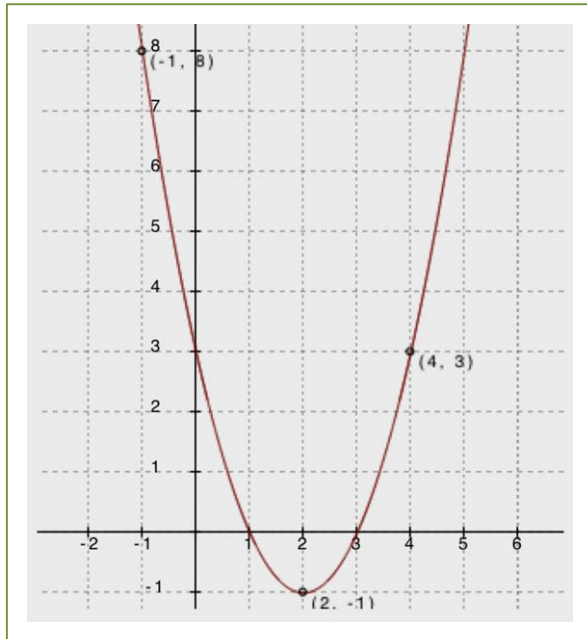
Name _____

Lesson 8: Exploring the Symmetry in Graphs of Quadratic Functions

Exploratory Exercise 2

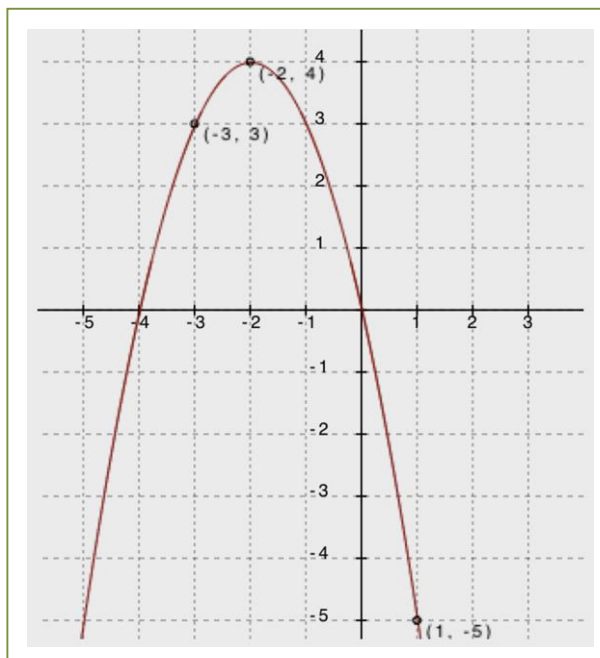
Use the graphs of quadratic functions *A* and *B* to fill in the table and answer the questions on the following page.

Graph *A*



x	$f(x)$
-1	8
2	-1
4	3

Graph *B*



x	$f(x)$
-3	3
-2	4
1	-5

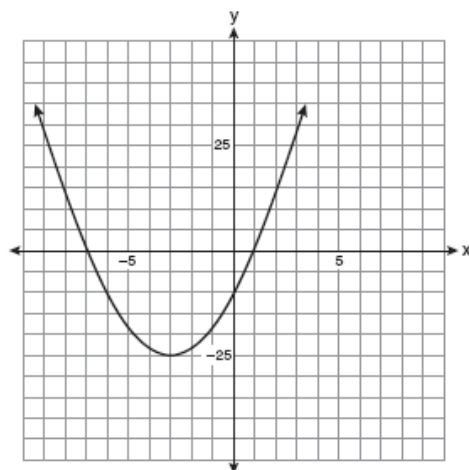
Use your graphs and tables of values from the previous page to fill in the blanks or answer the questions for each below:

		Graph A		Graph B	
1	x -intercepts				
2	Vertex				
3	Sign of the leading coefficient				
4	Vertex represents a minimum or maximum?				
5	Point of Symmetry	At what point can you fold the graph in half?		At what point can you fold the graph in half?	
6	Equation of the Quadratic	f(x)=		f(x)=	
7	Axis of Symmetry (Definition: For a quadratic in standard form, $f(x) = ax^2 + bx + c$, the vertical line at the point of symmetry.)	Formula for the Axis of Symmetry: $x = \frac{-b}{2a}$ This graph's axis of symmetry:		Formula for the Axis of Symmetry: $x = \frac{-b}{2a}$ This graph's axis of symmetry:	

Practice:

We Do 😊

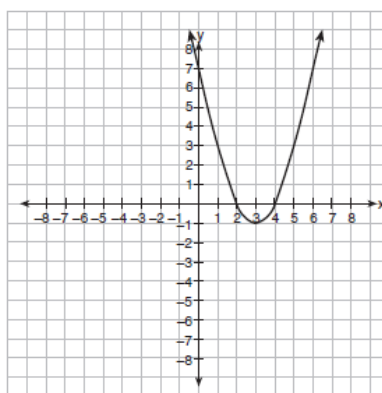
1. Which equation represents the axis of symmetry of the graph of the parabola below?



- 1) $y = -3$
- 2) $x = -3$
- 3) $y = -25$
- 4) $x = -25$

You Do 😊

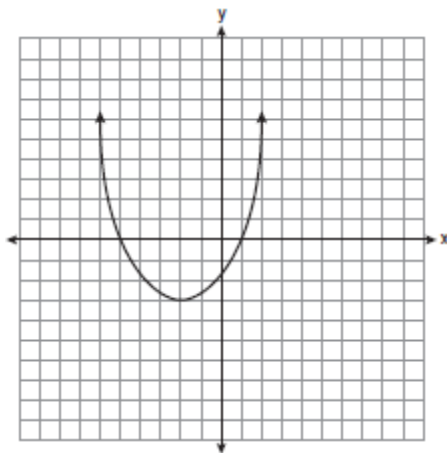
2. Which is an equation of the line of symmetry for the parabola in the accompanying diagram?



- 1) $x = 2$
- 2) $x = 4$
- 3) $x = 3$
- 4) $y = 3$

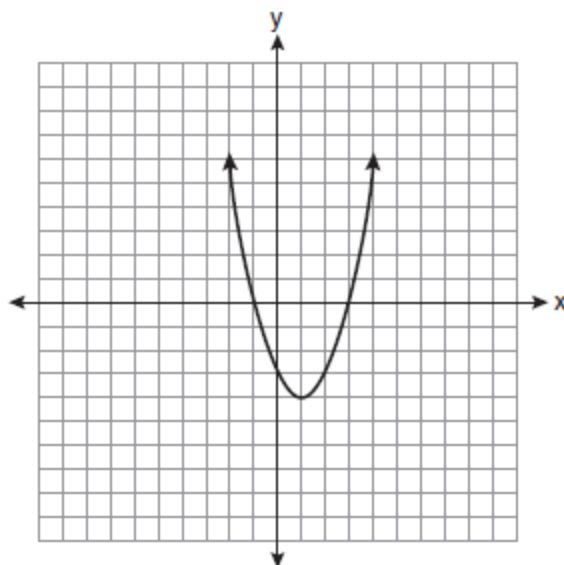
Homework:

1. What are the vertex and the axis of symmetry of the parabola shown in the diagram below?



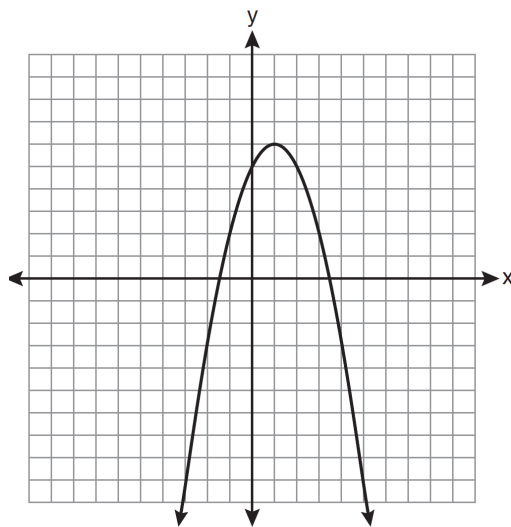
- 1) The vertex is $(-2, -3)$, and the axis of symmetry is $x = -2$.
- 2) The vertex is $(-2, -3)$, and the axis of symmetry is $y = -2$.
- 3) The vertex is $(-3, -2)$, and the axis of symmetry is $y = -2$.
- 4) The vertex is $(-3, -2)$, and the axis of symmetry is $x = -2$.

2. What are the vertex and axis of symmetry of the parabola shown in the diagram below?

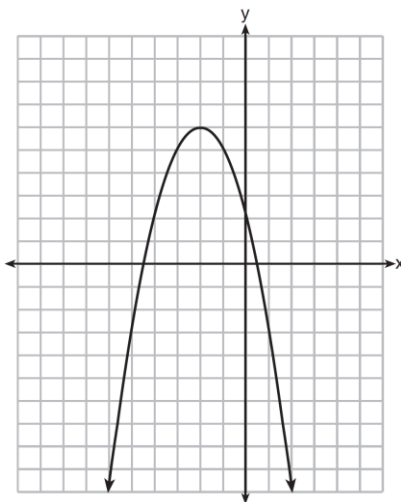


- 1) vertex: $(1, -4)$; axis of symmetry: $x = 1$
- 2) vertex: $(1, -4)$; axis of symmetry: $x = -4$
- 3) vertex: $(-4, 1)$; axis of symmetry: $x = 1$
- 4) vertex: $(-4, 1)$; axis of symmetry: $x = -4$

3. What are the vertex and the axis of symmetry of the parabola shown in the graph below?



- 1) vertex: $(1, 6)$; axis of symmetry: $y = 1$
 - 2) vertex: $(1, 6)$; axis of symmetry: $x = 1$
 - 3) vertex: $(6, 1)$; axis of symmetry: $y = 1$
 - 4) vertex: $(6, 1)$; axis of symmetry: $x = 1$
4. What are the coordinates of the vertex and the equation of the axis of symmetry of the parabola shown in the graph below?



- 1) $(0, 2)$ and $y = 2$
- 2) $(0, 2)$ and $x = 2$
- 3) $(-2, 6)$ and $y = -2$
- 4) $(-2, 6)$ and $x = -2$