

Lesson 22: Features of Parabolas

- Let's recall what we know about parabolas.

22.1: Matching Quadratic Graphs

Match the equation to the graph. Be prepared to explain your reasoning.

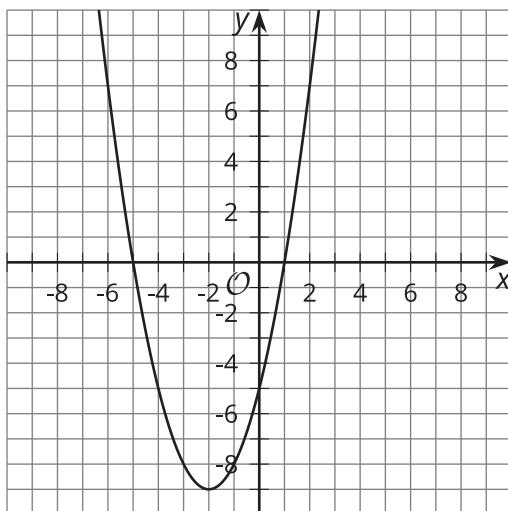
1. $y = x^2 + x$

2. $y = -x^2 - 3x$

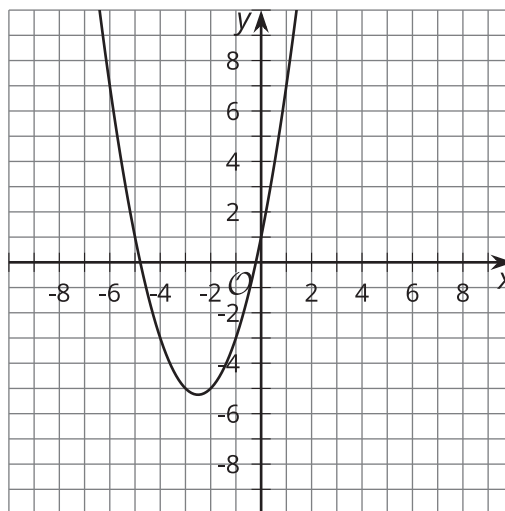
3. $y = (x - 1)(x + 5)$

4. $y = x^2 + 5x + 1$

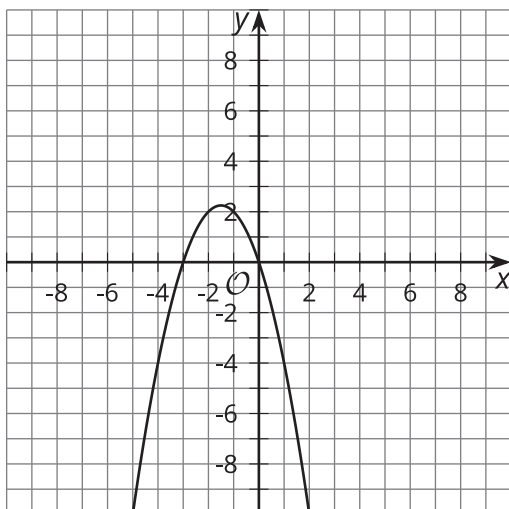
A



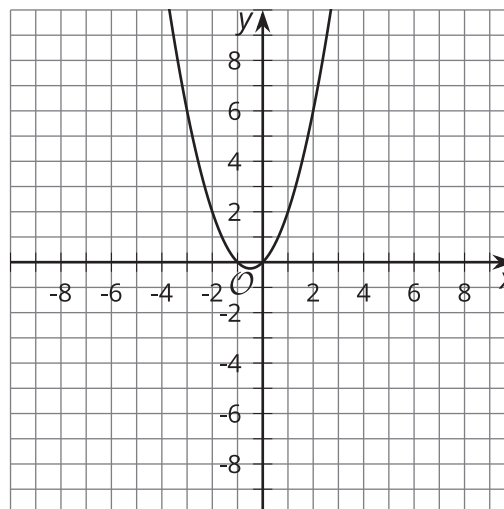
B



C



D



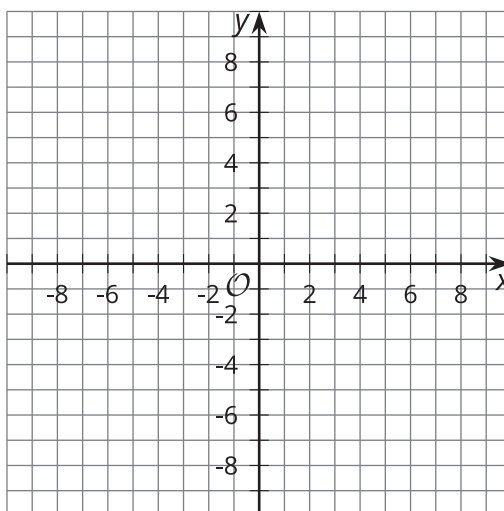
22.2: Features of a Quadratic Graph

- Graph the function $y = x^2 - 10x + 16$.
- Find the coordinates for the
 - x-intercepts
 - y-intercept
 - vertex
- Draw a dashed line along the line of symmetry for the graph.
- What do you notice about the line of symmetry as it relates to the:
 - vertex
 - x-intercepts
- Use the line of symmetry and the y-intercept to find another point on the parabola.

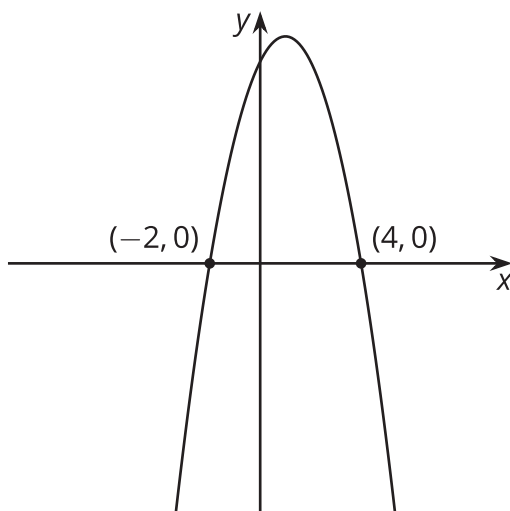
22.3: What Do You Know?

- Write a function that is represented by a graph with x-intercepts at $(-3, 0)$ and $(1, 0)$.
 - Without graphing the function, find the y-intercept. Explain or show your reasoning.

- b. Without using graphing technology, use the three points you know to sketch the graph of this function.



- c. What is the x -coordinate of the vertex? Explain your reasoning.
- d. Using the x -coordinate you found for the vertex, find the coordinate pair for the vertex.



2. a. What do you know about the coordinates of the y -intercept?
- b. What do you know about the coordinates of the vertex?