

Unit 7 Lesson 22: Features of Parabolas

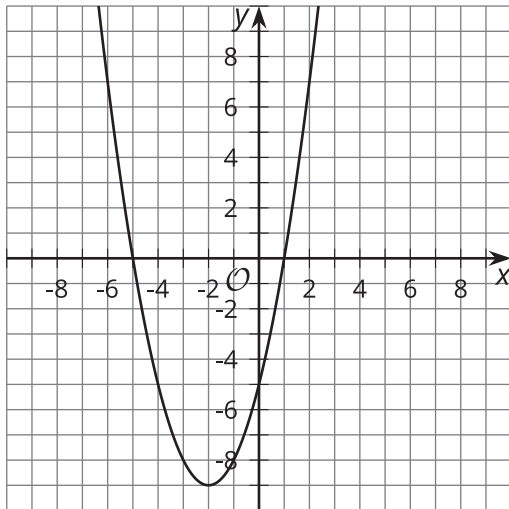
1 Matching Quadratic Graphs (Warm up)

Student Task Statement

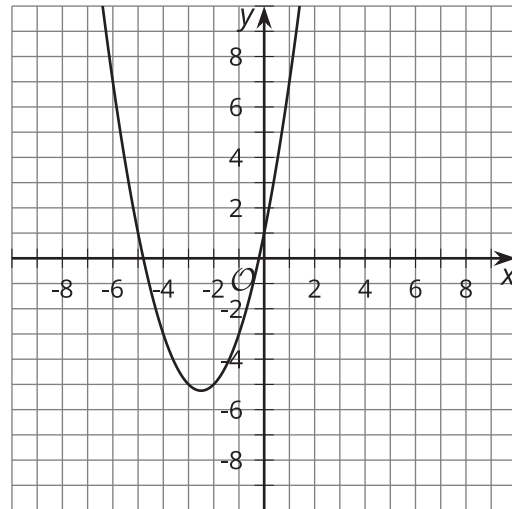
Match the equation to the graph. Be prepared to explain your reasoning.

1. $y = x^2 + x$
2. $y = -x^2 - 3x$
3. $y = (x - 1)(x + 5)$
4. $y = x^2 + 5x + 1$

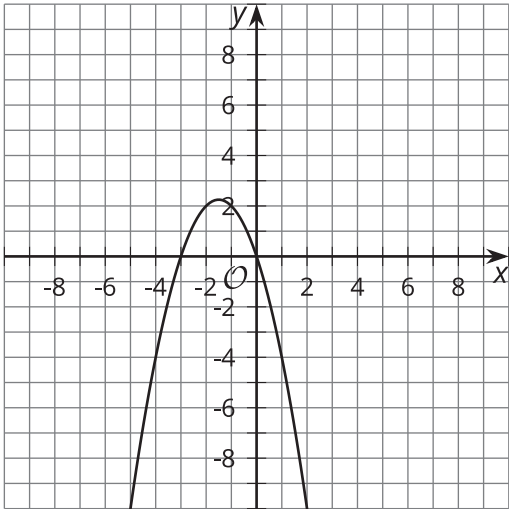
A



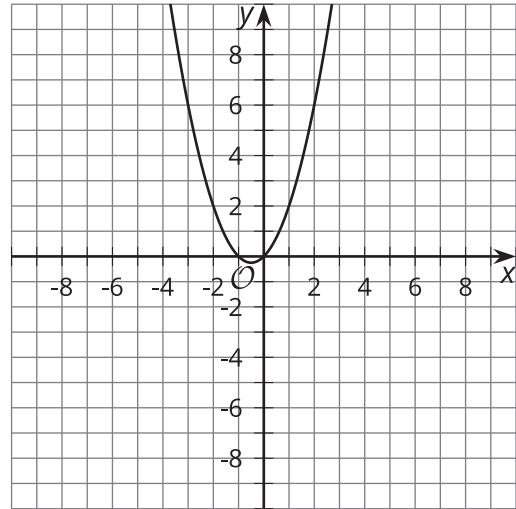
B



C

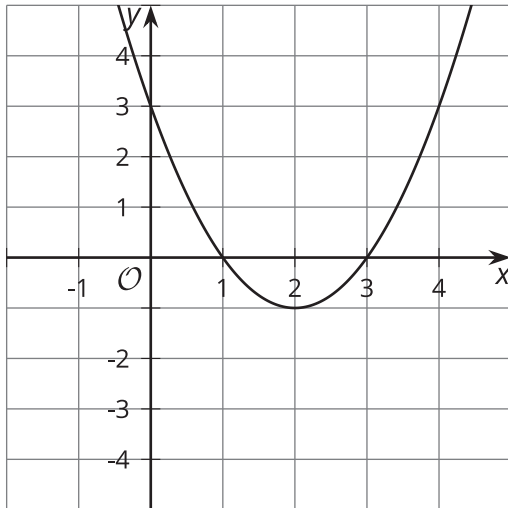


D



2 Features of a Quadratic Graph

Images for Launch



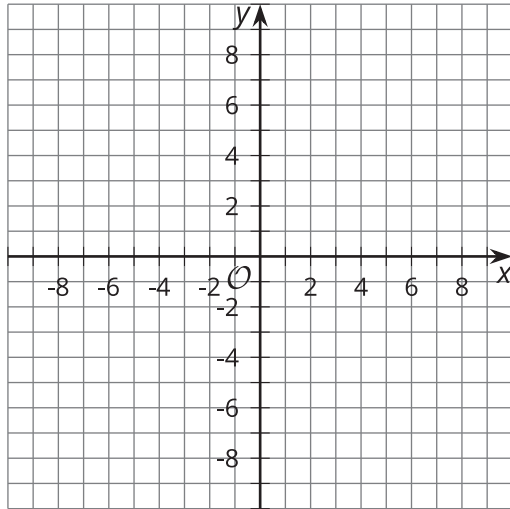
Student Task Statement

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

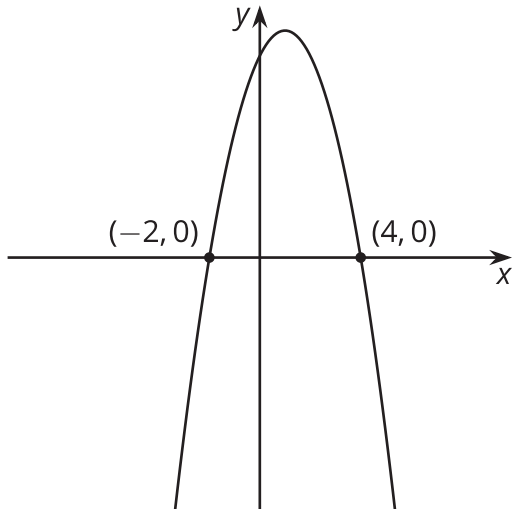
3 What Do You Know?

Student Task Statement

1. Write a function that is represented by a graph with x -intercepts at $(-3, 0)$ and $(1, 0)$.
 - a. 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?