Unit 8, Lesson 22

Features of Parabolas

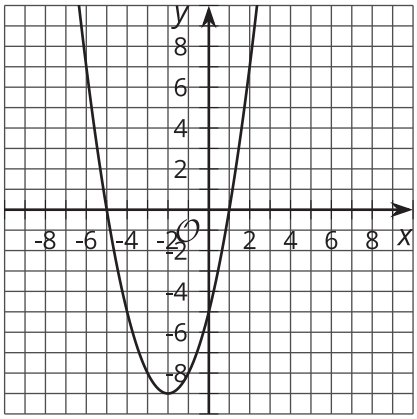
Let's recall what we know about parabolas.

22.1 Matching Quadratic Graphs

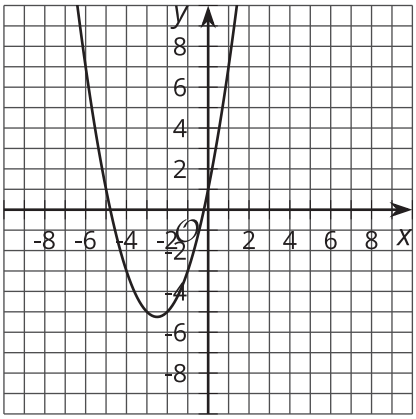
Match the equation to the graph. Be prepared to explain your reasoning.

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

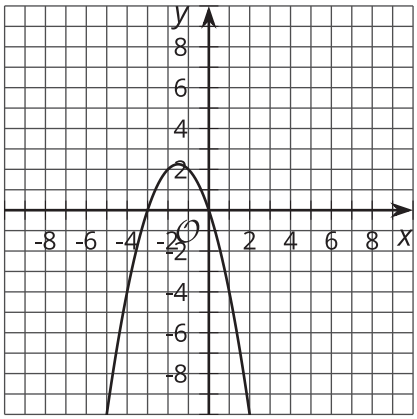
A



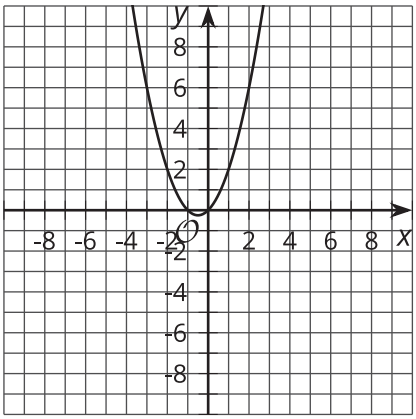
B



C



D



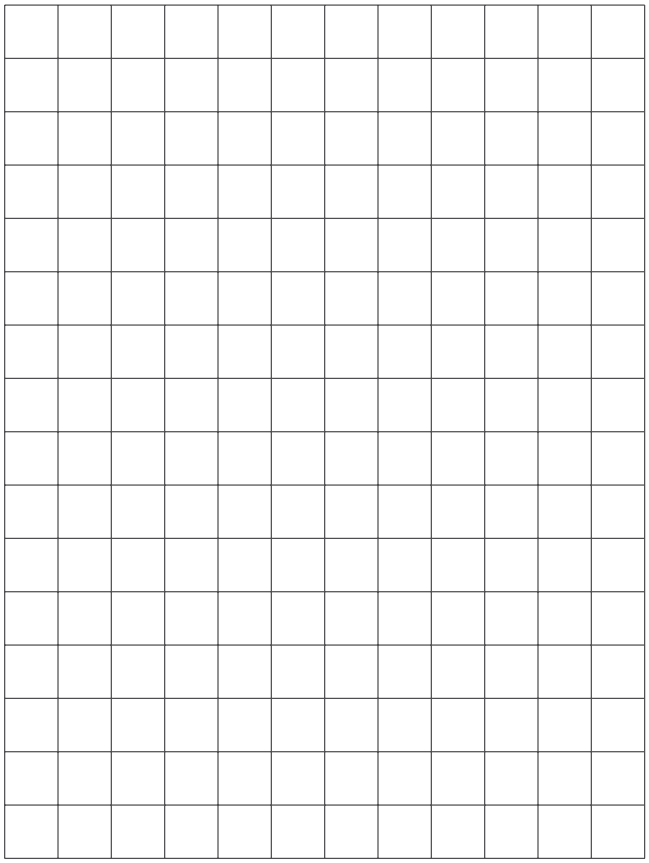
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22.2 Features of a Quadratic Graph

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

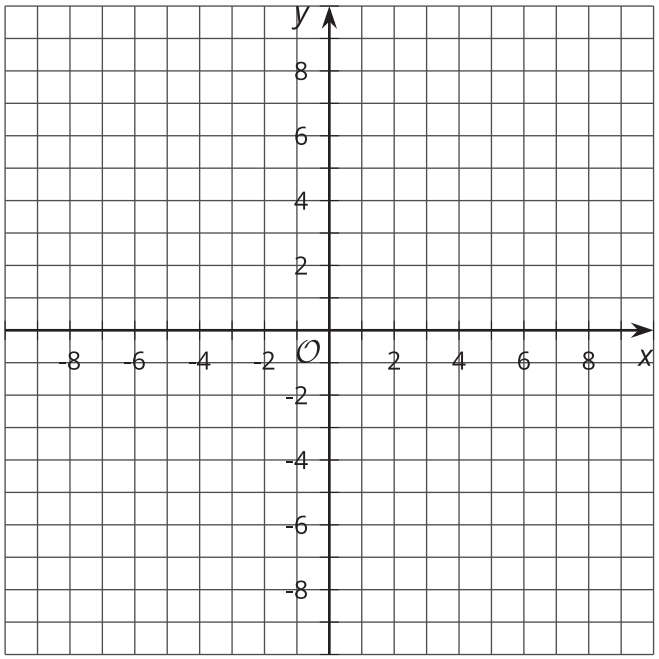
5. Use the line of symmetry and the y-intercept to find another point on the parabola.

22.3 What Do You Know?

1. Write the equation of 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.

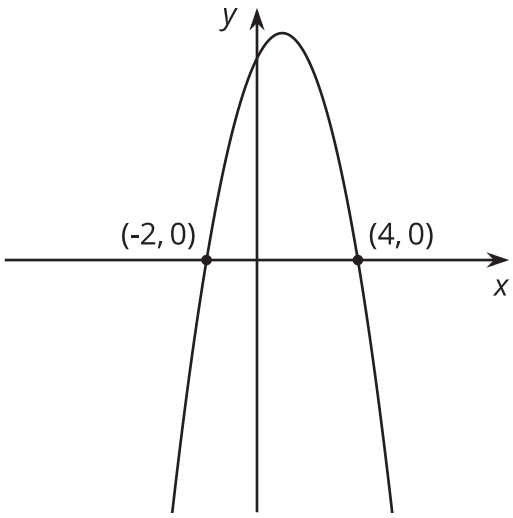
   b. Without using graphing technology, use the three points you know to sketch the graph of this function.



   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. Use the graph to answer the questions.



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

b. What do you know about the coordinates of the vertex?