ALBERT

Name _____ Date _____

Graphing Linear and Quadratic Functions Worksheet

Algebra 1 · Common Core HSF-IF.C.7a

> Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima.

Practice

Builds the skill step by step.

1. $f(x) = 2x - 6$. What is the x-intercept?

2. $f(x) = 2x - 6$. What is the y-intercept?

3. $f(x) = x^2 - 4$. What are the x-intercepts? List them from least to greatest.

4. What is the vertex of $f(x) = (x - 1)^2 + 3$?

5. Which way does the graph of $f(x) = -x^2 + 5$ open?

   A. down

   B. up

   C. left

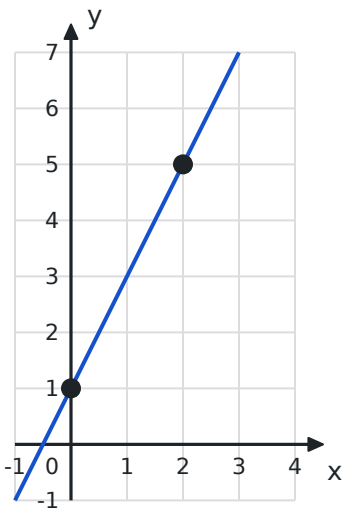
   D. right

6. What is the slope of $y = -3x + 4$?

7. $y = (x + 2)(x - 4)$. What are the x-intercepts? List them from least to greatest.

8. What is the y-intercept of $y = x^2 - 2x - 8$?

9. What is the slope of the line in the graph?



10. What is the minimum value of $y = x^2 + 6x + 5$?

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On Level

Grade-level practice.

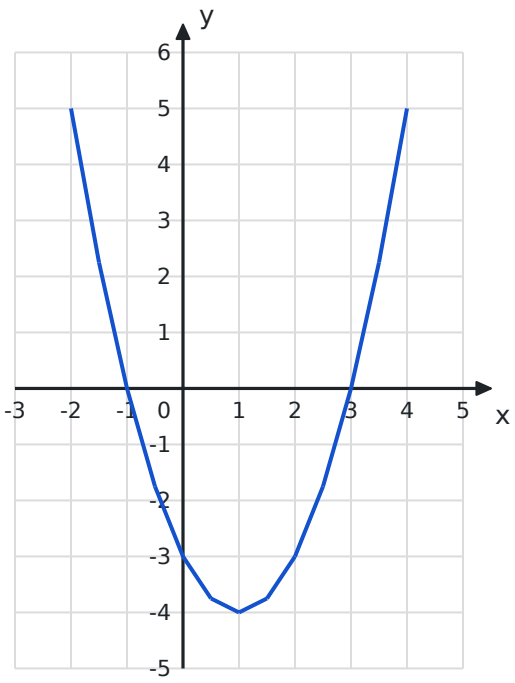
1. What is the maximum value of $y = -x^2 + 4x$?

2. What is the x-intercept of $3x + 2y = 12$?

3. $y = 2x^2 - 8$. What are the x-intercepts? List them from least to greatest.

4. What is the vertex of $y = x^2 - 6x + 5$?

5. The graph shows a quadratic function. What is its vertex?



6. Describe the key features of the graph of $y = (x - 3)(x + 1)$: its intercepts, vertex and direction.

7. What is the y-intercept of $y = 3(x - 2)^2 - 5$?

8. Which function's graph has a maximum point?

   A. $y = 2x^2 + 3$

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

   C. $y = 2x + 3$

   D. $y = x^2 - 3$

9. A line has slope $-\frac{1}{2}$ and passes through (4, 1). What is its y-intercept?

10. What is the axis of symmetry of $y = x^2 + 8x + 7$? Give the value c in $x = c$.

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Challenge

Multi-step and word problems that stretch it.

1. $y = -(x - 2)^2 + 9$. What are the x-intercepts? List them from least to greatest.

2. How many x-intercepts does $y = x^2 + 2x + 5$ have?

3. The graphs of $y = x + 1$ and $y = x^2 - 1$ meet at two points. What are their x-coordinates? List them from least to greatest.

4. A ball's height is $h = -16t^2 + 32t + 48$ feet. What is its maximum height?

5. A line passes through $(-2, 7)$ and $(4, -5)$. What is its x-intercept?

6. Which quadratic has vertex $(2, -3)$ and opens up?

   A. $y = (x + 2)^2 - 3$

   B. $y = -(x - 2)^2 - 3$

   C. $y = (x - 2)^2 - 3$

   D. $y = (x - 3)^2 + 2$

7. What is the minimum value of $y = 2x^2 - 4x - 6$?

8. Explain how to graph $y = -x^2 + 2x + 3$ by hand, naming its key features.

9. The lines $y = 2x + 1$ and $y = -x + 7$ intersect. What is the intersection point?

10. A quadratic has x-intercepts 1 and 5 and a y-intercept of 10. What is its minimum value?