Lesson 9-2 Quadratic Functions

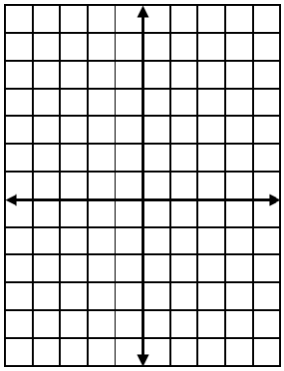
take note

Key Concept Graph of a Quadratic Function

The graph of $y = ax^2 + bx + c$, where $a \neq 0$, has the line $x = \frac{-b}{2a}$ as its axis of symmetry. The x-coordinate of the vertex is $\frac{-b}{2a}$.

Problem 1 **Graphing $y = ax^2 + bx + c$**

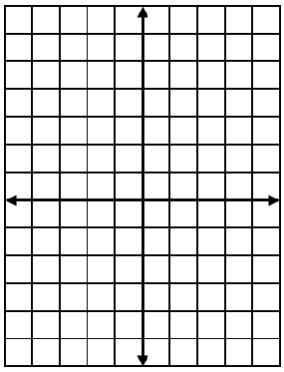
What is the graph of the function $y = x^2 - 6x + 4$?



What is the domain?

What is the range?

Got It? **1. a.** What is the graph of the function $y = -x^2 + 4x - 2$?



2. Find the equation of the axis of symmetry and the coordinates of the vertex.

$y = -4x^2 + 11$

Mastery Algebra 1 Practice 9-2 Name:_____

Per: ____

9-2 Quadratic Functions

1. Suppose Randy launches an arrow up into the air with an initial velocity of 96 feet per second, and the arrow is 6 ft above the ground when he launches it. The formula that describes the height of the arrow at any time t is $h = -16t^2 + 96t + 6$

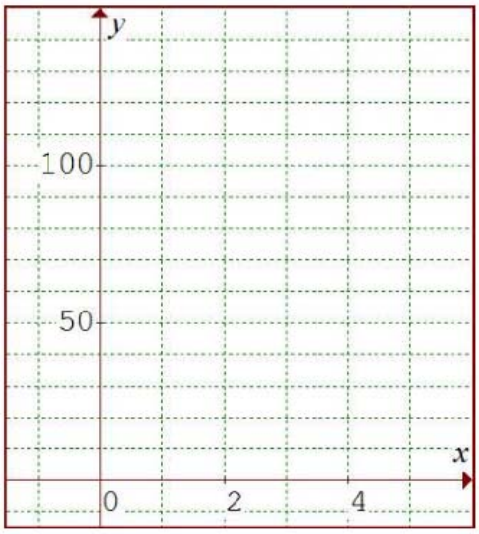
a. What is the equation of the axis of symmetry for this function?

b. What are the coordinates of the vertex for this function?

c. Choose appropriate values for x and complete the table below (min 5 points):

t	$h = -16t^2 + 96t - 6$	h

d. Use your points to graph the function.



e. What is the maximum height of the arrow, and how long does it take to reach that height?

HW p 556: 7, 8, 10, 16-19 (explain how you know!), and graph 20, 21, 23

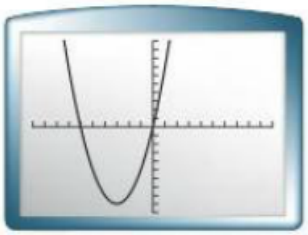
Find the equation of the axis of symmetry and the coordinates of the vertex of the graph of each function.

7. $y = 2x^2 + 3$ **8.** $y = -3x^2 + 12x + 1$ **10.** $y = x^2 - 8x - 7$

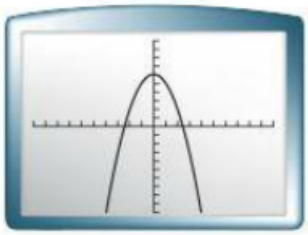
Match each function with its graph.

16. $y = -x^2 - 6x$ **17.** $y = -x^2 + 6$ **18.** $y = x^2 - 6$ **19.** $y = x^2 + 6x$

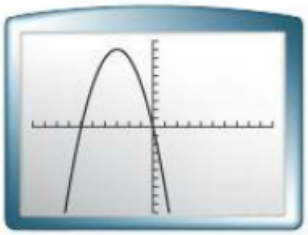
A.



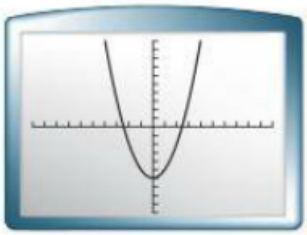
B.



C.



D.



Graph each function. Label the axis of symmetry and the vertex.

20. $f(x) = x^2 + 4x - 5$ **21.** $y = 3x^2 - 20x$ **23.** $f(x) = -x^2 + 4x + 3$