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NAME _____ DATE _____

Module Test B

Module 14

Determine the direction each parabola opens by inspection.

1. $x = 2y^2$ _____

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

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

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

5. $x = y^2 - 7y + 8$ _____

6. $y = -2x^2 + x + 3$ _____

7. $x = -(y + 2)^2 + 6$ _____

8. $y = 4x^2 - 1$ _____

9. Given the equation of the parabola $y = x^2 - 8x + 7$, answer the following:

a. Find the axis of symmetry using the Axis of Symmetry Formula.

_____

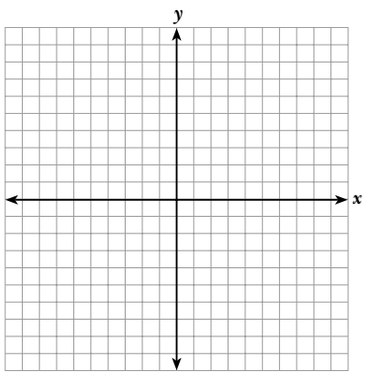
b. Identify the vertex.

_____

c. Find four other points on the graph.

_____

d. Graph the parabola.



10. Given the equation of the parabola $x = -y^2 - 2y$, answer the following:

a. Find the axis of symmetry using the Axis of Symmetry Formula.

_____

b. Identify the vertex.

_____

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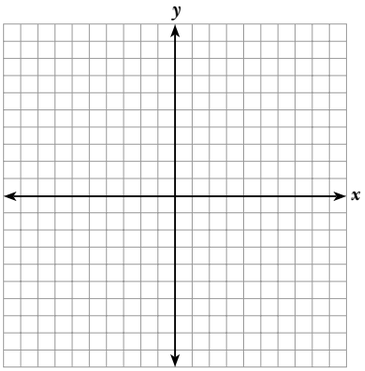
c. Find four other points on the graph.

d. Graph the parabola.



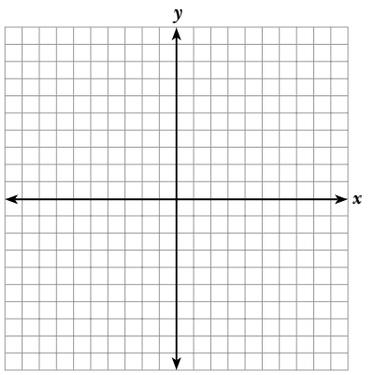
11. Given the equation of the parabola $y = -3x^2 - 12x - 5$, answer the following:

a. Complete the square to write the equation in the form $y = a(x - h)^2 + k$.

b. Identify the vertex.

c. Find four other points on the graph.

d. Graph the parabola.



12. Determine whether each statement is true or false.

a. The graph of $y = x^2$ is narrower than the graph of $y = 2x^2$.

b. The graph of $x = -2y^2$ is narrower than the graph of $x = -y^2$.

c. The graph of $x = 4y^2 - y$ is wider than the graph of $x = y^2 + 3y$.

d. The graph of $y = -x^2 + 6x - 1$ is wider than the graph of $y = 2x^2 - 5x + 4$.

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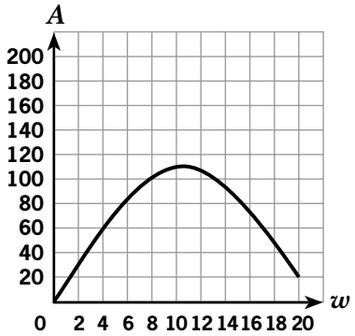
13. A rectangular yard is to be enclosed using 42 feet of fencing. The graph represents the width and area of this yard.



a. Using w for width and l for length, write an equation for the perimeter of the yard.

_____

b. Using the perimeter equation in the previous problem, solve for l in terms of w.

_____

c. Write an equation to find the maximum area of this rectangular yard in one variable. Put the equation in standard form.

_____

d. Using the graph, estimate the width that would maximize the area of the yard.

_____

e. Estimate the maximum area of the yard.

_____

14. The vertex of the equation $y = -4x^2 + 16x - 1$ is _____.

a. (0, –1) **b.** (2, 1) **c.** (2, 15) **d.** (4, 11)

15. The height of a leaf falling from a tree is modeled by the equation $h = -16t^2 + 64$, where h is in feet and t is in seconds. How long did it take for the leaf to hit the ground?

a. one second **b.** two seconds **c.** three seconds **d.** four seconds

Answer the following questions:

16. Compare the graphs of $y = \frac{1}{2}x^2 + 3$ and $y = -\frac{1}{2}(x + 3)^2$.

_____

_____

_____

_____

17. Give an example of a quadratic relation that is *not* a function.

_____

_____

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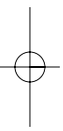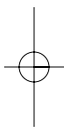
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