

## Graphing Quadratic Functions

SHOW YOUR WORK!!

Define each of the following terms. Use your notes if you need help.

1. Axis of Symmetry -
2. Domain -
3. Parabola -
4. Quadratic -
5. Range -
6. Transformation -
7. Vertex -
8. X-intercepts (Zeros or Roots) -
9. Y-intercept -

Fill in the blank with the appropriate expression.

10. The standard form of a quadratic equation is \_\_\_\_\_.
  - a. The formula for the axis of symmetry is \_\_\_\_\_.
11. The vertex form of a quadratic equation is \_\_\_\_\_.
  - a. The formula for the vertex is \_\_\_\_\_.
  - b. The formula for the axis of symmetry is \_\_\_\_\_.
12. The parent function of a quadratic is \_\_\_\_\_.
13. When ' $a$ ' is positive, does the parabola open up or down? \_\_\_\_\_.
14. When ' $a$ ' is negative, does the parabola open up or down? \_\_\_\_\_.
15. When a parabola opens up, is the vertex a maximum or minimum? \_\_\_\_\_.
16. When a parabola opens down, is the vertex a maximum or minimum? \_\_\_\_\_.

Find the axis of symmetry, vertex, domain, and range for each quadratic function.

17)  $y = -2x^2 + 8x + 1$

18)  $y = 5x^2 - 10x$

19)  $y = \frac{1}{2}x^2 + 4$

Open Up or Down?: \_\_\_\_\_ Open Up or Down?: \_\_\_\_\_ Open Up or Down?: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_ Axis of Symmetry: \_\_\_\_\_ Axis of Symmetry: \_\_\_\_\_

Vertex: \_\_\_\_\_ Vertex: \_\_\_\_\_ Vertex: \_\_\_\_\_

Max or Min?: \_\_\_\_\_ Max or Min?: \_\_\_\_\_ Max or Min?: \_\_\_\_\_

Analyze the graph of each quadratic function. Identify the axis of symmetry, vertex,  $y$ -intercept,  $x$ -intercepts, domain, and range.

20)

Axis of Symmetry: \_\_\_\_\_

Vertex: \_\_\_\_\_

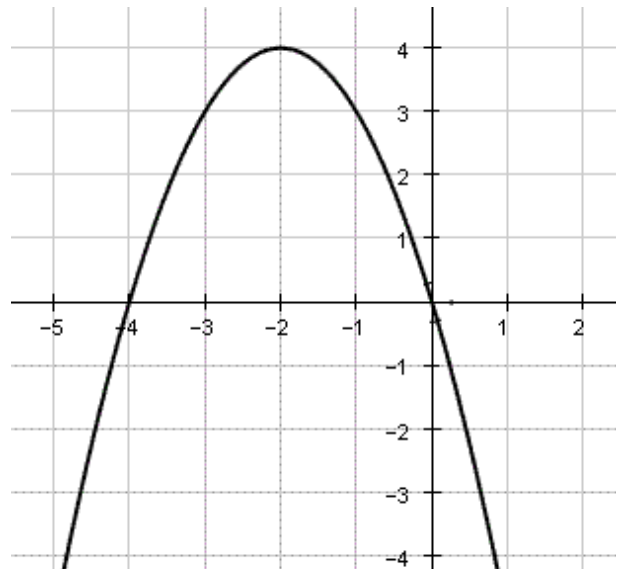
Max or Min? \_\_\_\_\_

$y$ -intercept: \_\_\_\_\_

$x$ -intercepts: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_



21)

Axis of Symmetry: \_\_\_\_\_

Vertex: \_\_\_\_\_

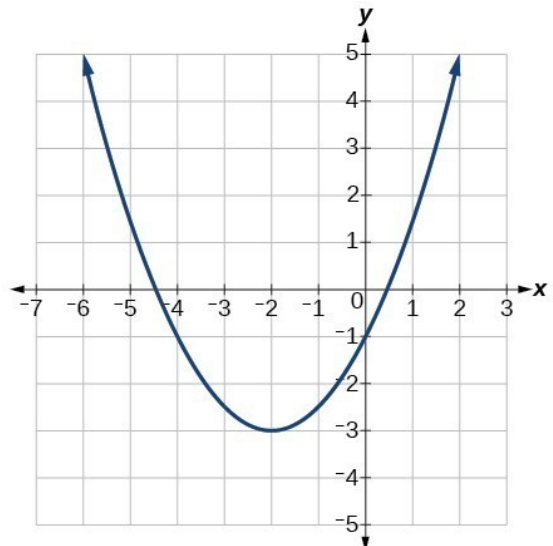
Max or Min? \_\_\_\_\_

$y$ -intercept: \_\_\_\_\_

$x$ -intercepts: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_



Graph each quadratic function. Find the axis of symmetry, vertex, domain, and range.

22)  $y = -3x^2 + 6x + 5$

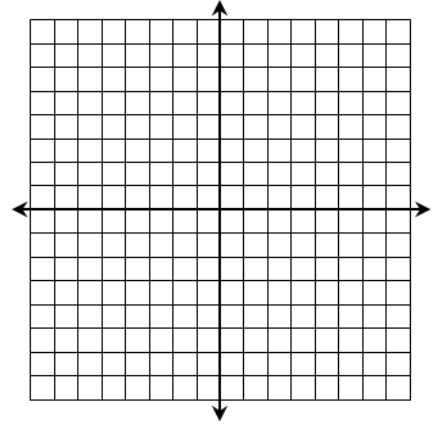
Axis of Symmetry: \_\_\_\_\_

Vertex: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

$x$	$y$



23)  $y = -\frac{1}{2}x^2 - 2x - 4$

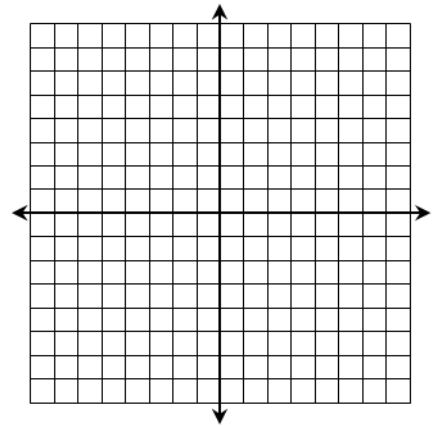
Axis of Symmetry: \_\_\_\_\_

Vertex: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

$x$	$y$



24)  $y = 2x^2 + 4x + 1$

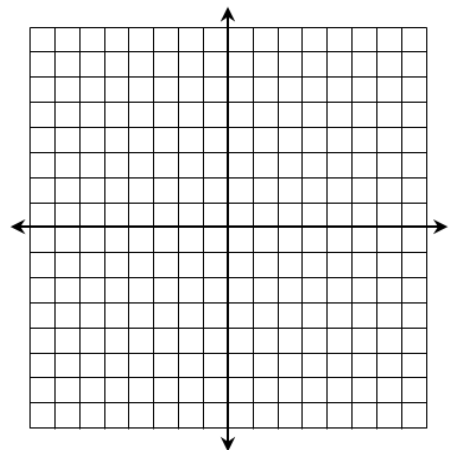
Axis of Symmetry: \_\_\_\_\_

Vertex: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

$x$	$y$



25)  $y = -(x - 1)^2 - 2$

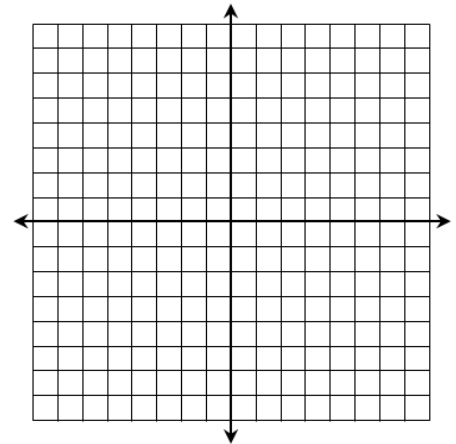
Axis of Symmetry: \_\_\_\_\_

Vertex: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

$x$	$y$



**Describe the transformation of each quadratic function from the parent function,  $y = x^2$ .**

26)  $y = (x - 7)^2 - 4$

\_\_\_\_\_

27)  $y = -3(x + 2)^2$

\_\_\_\_\_

28)  $y = -2x^2 + 9$

\_\_\_\_\_