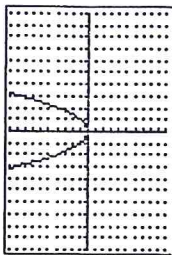


# Study Guide

NAME: Key

## VERTEX FORM PRACTICE #4

The graph of  $y = x^2$  is shown below. The following equations are vertical and horizontal translations of  $y = x^2$ . Use what you have learned about translation of the vertex of a quadratic function to determine the vertex of the graph of each equation below. Check your answers on the graphing calculator.



Rewrite each function. Circle the h value and the k value.

1.)  $y = (x - 3)^2 + 7$

Vertex:

$(3, 7)$

2.)  $y = (x + 4)^2 + 9$

Vertex:

$(-4, 9)$

3.)  $y = x^2 + 5$

Vertex:

$(0, 5)$

4.)  $y = (x - 6)^2$

Vertex:

$(6, 0)$

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

Vertex:

$(-2, -5)$

6.)  $y = x^2 - 7$

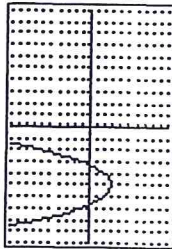
Vertex:

$(0, -7)$

What is the most likely equation of the parabola (quadratic function) that is graphed?

$(-5, -3)$

7.) Vertex:

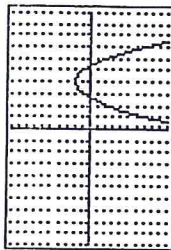


Quadratic Function in Vertex Form:

$y = a(x + 5)^2 - 3$

8.) Vertex:

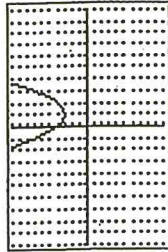
$(4, 2)$



Quadratic Function in Vertex Form:

$y = -a(x - 4)^2 + 2$

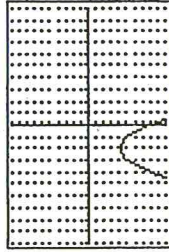
9.) Vertex: (1, 3)



$y = a(x - 1)^2 + 3$

Quadratic Function in Vertex Form:

10.) Vertex: (-2, -4)



$y = -a(x + 2)^2 - 4$

Quadratic Function in Vertex Form:

Match each equation from items #11 - #15 with its graph in column 2. Be sure to look at all the equations and compare them before you answer any questions. Notice, the only difference in all the equations is the value of  $a$ .

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

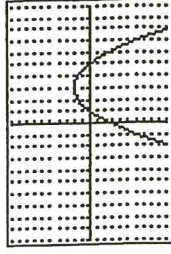
12.)  $y = 2(x - 3)^2 + 2$   
e

13.)  $y = -.5(x - 3)^2 + 2$   
a

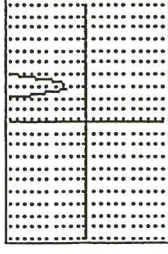
14.)  $y = .25(x - 3)^2 + 2$   
c

15.)  $y = 8(x - 3)^2 + 2$   
b

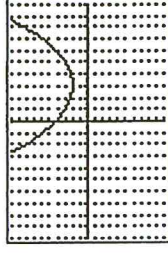
a.)



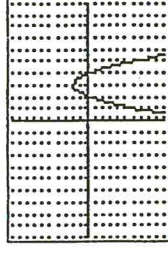
b.)



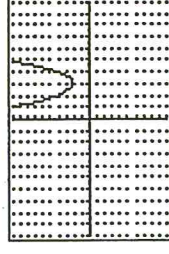
c.)

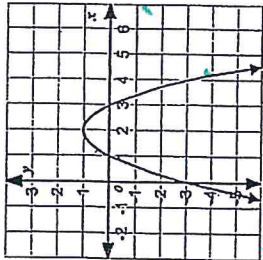


d.)



e.)





Zero(s):

(1,0)

(3,0)

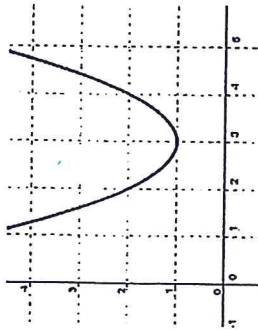
Name this function.

Quadratic Function

$$f = 5x^2 - 3x + 4$$

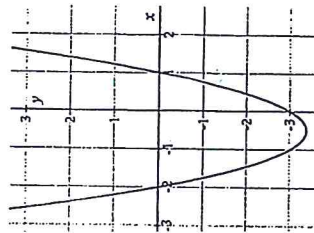
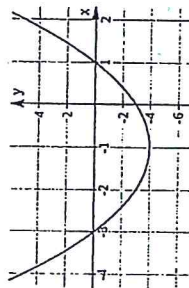
What is this graph called?

Parabola



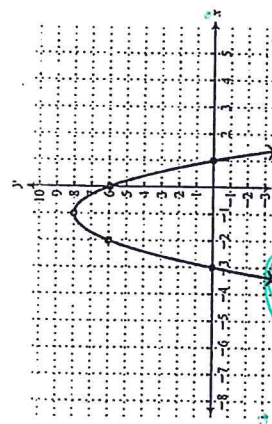
Vertex:

(3,1)

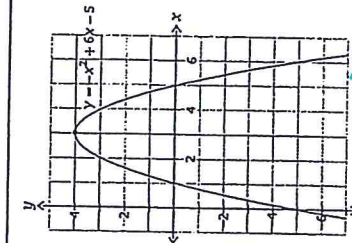


Y-intercept:

(0, -3)



Maximum or minimum? (circle one)



Vertex:

(3,4)

Zero(s):

(1,0) (5,0)

Axis of Symmetry:

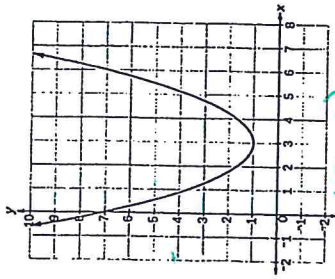
$x = 3$

Y-intercept:

(0, -5)

Maximum/ Minimum

max



Vertex:

(3,1)

Zero(s):

None

Axis of Symmetry:

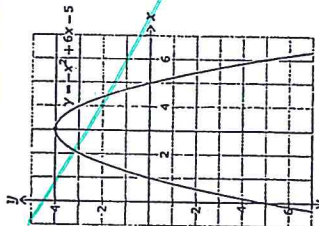
$x = 3$

Y-intercept:

(0, 7)

Maximum/ Minimum

min



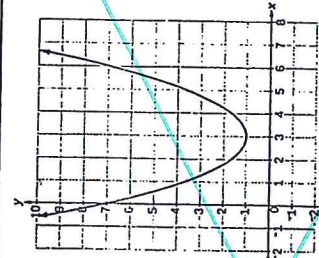
Vertex:

Zero(s):

Axis of Symmetry:

Y-intercept:

Maximum/ Minimum



Vertex:

Zero(s):

Axis of Symmetry:

Y-intercept:

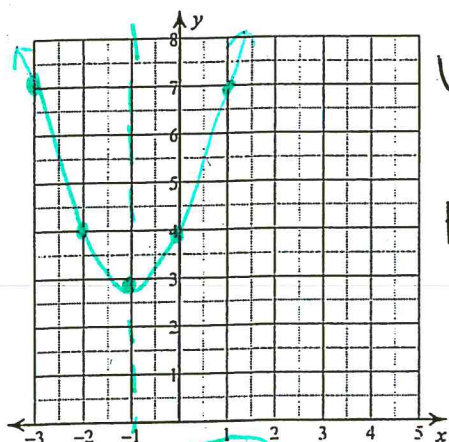
Maximum/ Minimum

## Graphing Vertex Form

Period \_\_\_\_\_

Graph the vertex, Axis of Symmetry, and four points (2 from the table, 2 reflected)

1)  $y = (x + 1)^2 + 3$

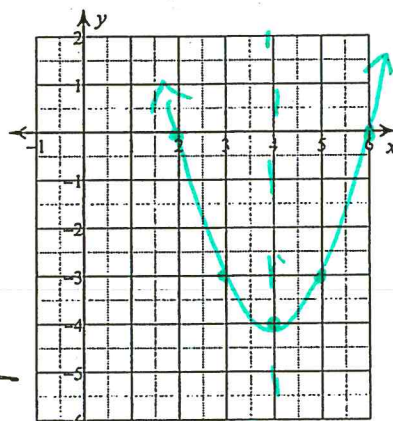


Vertex  
 $(-1, 3)$   
 AOS:  $x = -1$

| x | y |
|---|---|
| 0 | 4 |
| 1 | 7 |

max/min

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

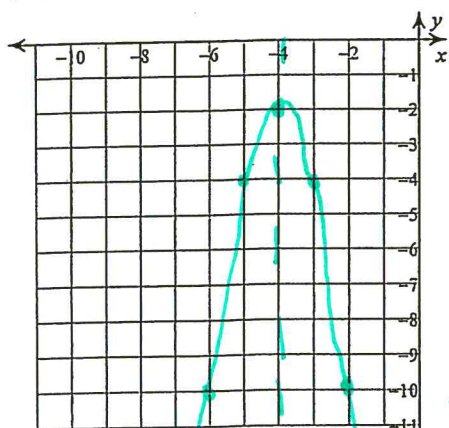


Vertex  
 $(4, -4)$   
 AOS  $x = 4$

| x | y  |
|---|----|
| 5 | -3 |
| 6 | 0  |

max/min

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

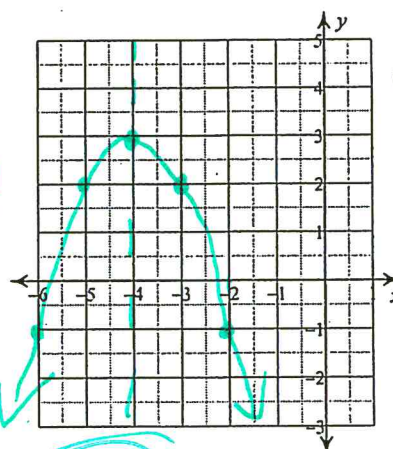


Vertex  
 $(-4, -2)$   
 AOS  $x = -4$

| x  | y   |
|----|-----|
| -3 | -4  |
| -2 | -10 |

max/min

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

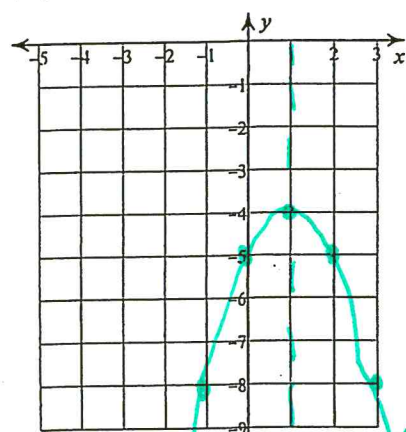


Vertex  
 $(-4, 3)$   
 AOS  $x = -4$

| x  | y  |
|----|----|
| -3 | 2  |
| -2 | -1 |

max/min

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

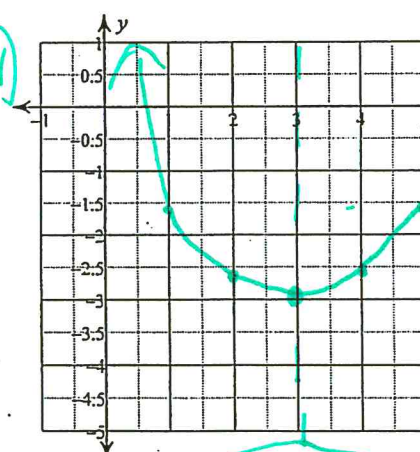


Vertex  
 $(1, -4)$   
 AOS  $x = 1$

| x | y  |
|---|----|
| 2 | -5 |
| 3 | -8 |

max/min

6)  $y = \frac{1}{3}(x - 3)^2 - 3$



Vertex  
 $(3, -3)$   
 AOS  $x = 3$

| x | y    |
|---|------|
| 4 | -4/3 |
| 5 | -5/3 |

max/min