

## Unit 8 Day 6 HW Study Guide for Graphing Quiz

Name: KEY

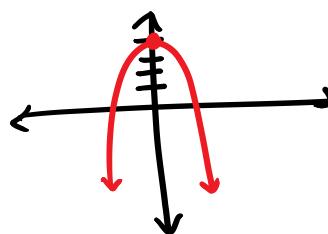
1. Which of the following quadratic functions would have a graph open downward and shift up 4?

a.  $f(x) = 5x^2 - 4$

b.  $f(x) = -5x^2 - 4$

c.  $f(x) = -5x^2 + 4$

d.  $f(x) = 5x^2 + 4$



For #'s 2-4, draw an accurate graph (with at least five key points) and find the following:

2.  $y = (x - 2)^2 + 5$  **vertex:  $(2, 5)$**

Axis of Symmetry:  $x = 2$

Vertex:  $(2, 5)$  MAX or MIN

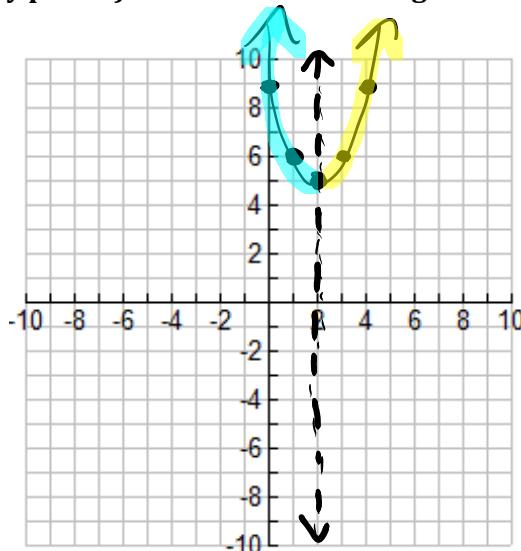
direction of graph: up

range:  $y \geq 5$

End Behavior:  $x \rightarrow -\infty, y \rightarrow \underline{\underline{\infty}}$   
 $x \rightarrow \infty, y \rightarrow \underline{\underline{\infty}}$

Increasing interval:  $[2, \infty)$

Decreasing interval:  $(-\infty, 2]$



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

Axis of Symmetry:  $x = -3$

Vertex:  $(-3, -5)$  MAX or MIN

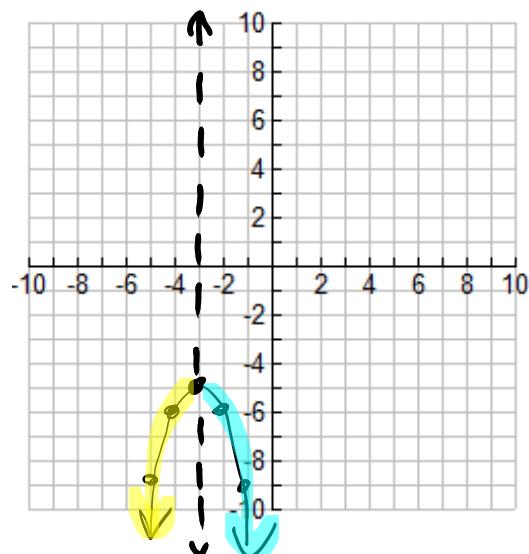
direction of graph: down

range:  $y \leq -5$

End Behavior:  $x \rightarrow -\infty, y \rightarrow \underline{-\infty}$   
 $x \rightarrow \infty, y \rightarrow \underline{-\infty}$

Increasing interval:  $(-\infty, -3)$

Decreasing interval:  $(-3, \infty)$



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

Axis of Symmetry:  $x = -4$

Vertex: ( $-4, 9$ ) MAX or MIN

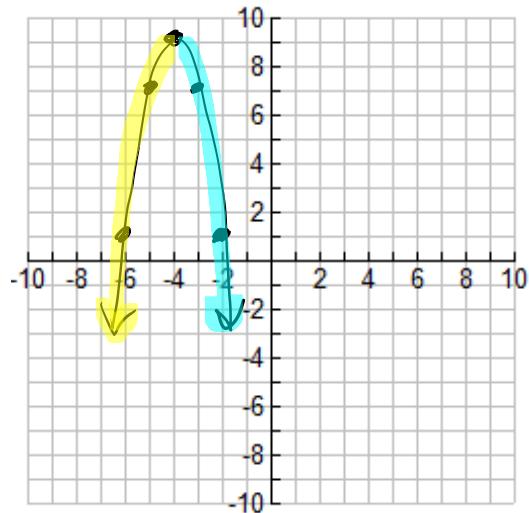
direction of graph: down

range:  $y \leq 9$

End Behavior:  $x \rightarrow -\infty, y \rightarrow -\infty$   
 $x \rightarrow \infty, y \rightarrow -\infty$

Increasing interval:  $(-\infty, -4]$

Decreasing interval:  $[-4, \infty)$



Describe the transformation(s) on each of the following functions compared to the parent function  $y = x^2$ .

5.  $f(x) = 2(x - 4)^2$

1) Vert. stretch by 2

2) Right 4

6.  $g(x) = -(x + 3)^2 + 5$

1) Reflection over x-axis

2) Left 3

3) Up 5

7.  $h(x) = 6x^2 + 7$

1) Vert. stretch by 6

2) Up 7

For #'s 8-9, draw an accurate graph (with at least five key points) and find the following:

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

$$x = \frac{-b}{2a} = -1$$

Axis of Symmetry:  $x = -1$

Vertex: ( $-1, -5$ ) MAX or MIN

y-intercept: (0, -2)

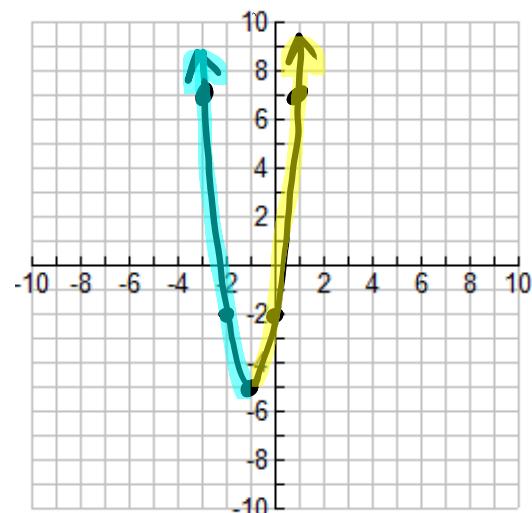
range:  $y \geq -5$

End Behavior:  $x \rightarrow -\infty, y \rightarrow \infty$

$x \rightarrow \infty, y \rightarrow \infty$

Increasing interval:  $[-1, \infty)$

Decreasing interval:  $(-\infty, -1]$



down  
 $y = -2x^2 + 4x + 3$

$$x = \frac{-4}{2(-2)} = 1$$

Axis of Symmetry:  $x = 1$

Vertex:  $(1, 5)$  MAX or MIN

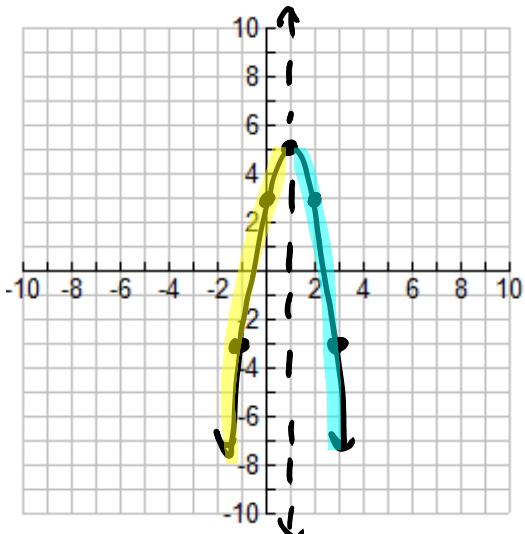
y-intercept:  $(0, 3)$

range:  $y \leq 5$

End Behavior:  $x \rightarrow -\infty, y \rightarrow -\infty$   
 $x \rightarrow \infty, y \rightarrow -\infty$

Increasing interval:  $(-\infty, 1]$

Decreasing interval:  $[1, \infty)$



10. Given the following equation,  $y = 3(x+5)^2 - 10$ , what is the vertex?  $(-5, -10)$

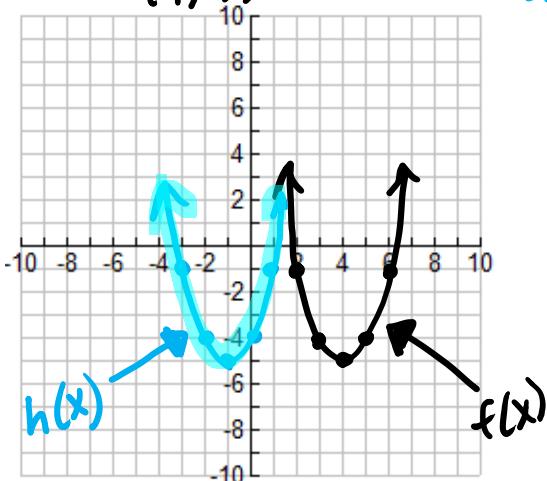
11. Given the following equation,  $y = (x-2)^2 + 6$ , what is the range?  $y \geq 6$   
 $(2, 6)$

12. Given the following equation,  $y = -(x+1)^2 + 3$ , what is the increasing interval?  $(-\infty, -1]$   
 $(-1, 3)$

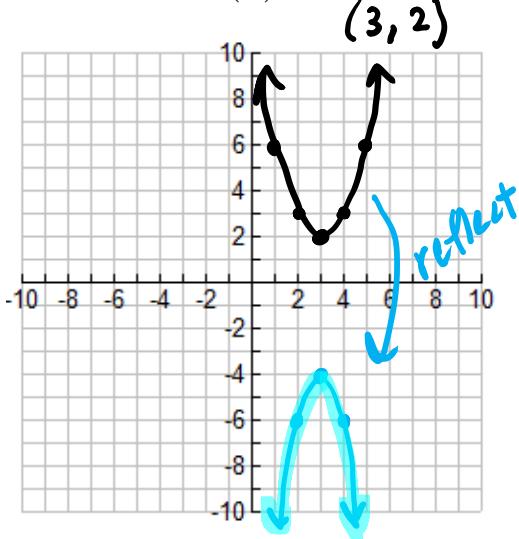
13. Given the following equation,  $y = \frac{1}{2}(x+6)^2 - 4$ , what is the axis of symmetry?  $x = -6$   
 $(-6, -4)$

14. Given the following equation,  $y = -5(x+6)^2 + 8$ , what direction does the parabola open? down  
 $\uparrow$

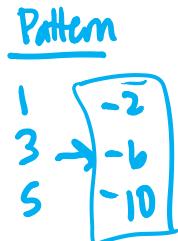
15. If  $f(x) = (x-4)^2 - 5$ , graph  $h(x) = f(x+5)$  on the same set of axes.  
 $(4, -5)$  Left 5



16. Given the graph of  $f(x) = (x - 3)^2 + 2$ , graph  $g(x) = -2f(x)$  on the same set of axes.



- ① Reflect over x-axis  
② Vert. stretch by 2



Vocabulary to know.....

- Vertex Form
- Standard Form
- vertex
- axis of symmetry
- range
- increasing/decreasing interval
- max/min
- y-intercept
- end behavior statements

STUDY, STUDY, STUDY !!!