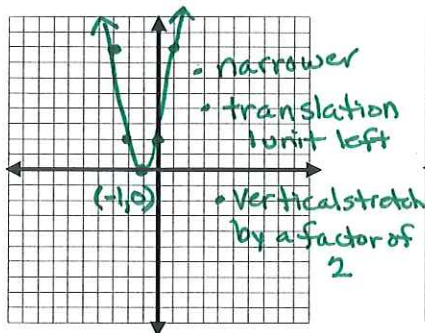


Chapter 8 Review Homework Alg 1H

Graph each function. Compare the graph to the graph of  $f(x) = x^2$ . (Lesson 8.4)

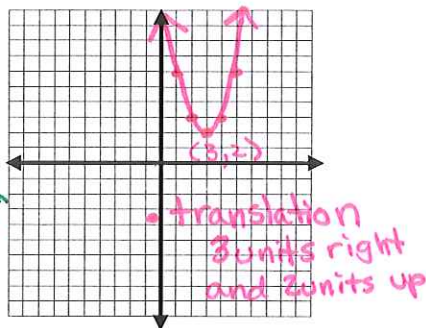
1.  $g(x) = 2(x+1)^2$

-3	-2	-1	0	1
8	2	0	2	8



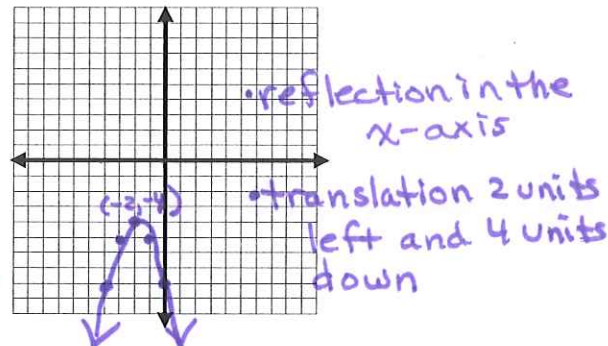
2.  $g(x) = (x-3)^2 + 2$

1	2	3	4	5
6	3	2	3	6



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

-4	-3	-2	-1	0
-8	-5	-4	-5	-8



Rewrite the quadratic function in vertex form.

4.  $y = 2x^2 + 4x - 1$

$0 = 2x^2 + 4x - 1$   
 $0 = 2(x^2 + 2x) - 1$   
 $0 = 2(x^2 + 2x + 1) - 2 - 1$   
 $y = 2(x+1)^2 - 3$

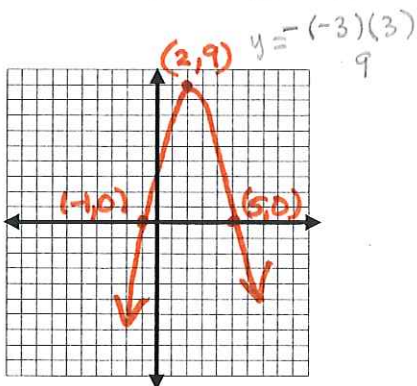
5. The graph of  $y = x^2$  is translated 4 units left and 3 units down. Write an equation for the function in vertex form and in standard form. Describe advantages of writing the function in each form.

$y = (x+4)^2 - 3$  vertex form: quickly see vertex and axis of symmetry  
 $y = x^2 + 8x + 13$  standard form: easy to see y-intercept

Graph the quadratic function. Label the vertex, axis of symmetry, and x-intercepts. Describe the domain and range of the function. (Lesson 8.5)

6.  $y = -(x-5)(x+1)$

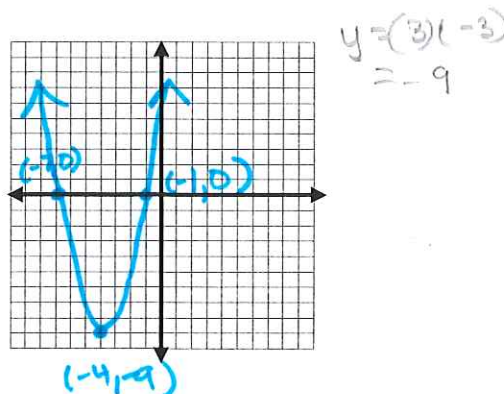
$x = \frac{-1+5}{2} = \frac{4}{2} = 2$



7.  $y = x^2 + 8x + 7$

$0 = (x+7)(x+1)$

$x = \frac{-7+1}{2} = \frac{-6}{2} = -3$



domain: all real numbers  
 range:  $y \leq 9$

Write a quadratic function in **standard form** whose graph satisfies the given conditions.

Sample answers:

8. x-intercepts: 2 and 7

$$y = x^2 - 9x + 14$$

9. axis of symmetry:  $x = -3$

$$y = x^2 + 6x + 9$$

10. passes through:  $(-4, 0)$  and  $(4, 0)$

$$y = x^2 - 16$$

11. The cross-section of a pond can be modeled by the function  $y = \frac{1}{6}(x^2 - 9)$ , where  $x$  and  $y$  are measured in feet. The  $x$ -axis represents the surface of the water. How wide and deep is the pond?



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

$$x = \frac{-3+3}{2} = \frac{0}{2} = 0$$

$$y = \frac{1}{6}(3)(-3) = \frac{1}{6}(-9) = -\frac{9}{6} = -\frac{3}{2}$$

6 ft. wide  
1.5 ft. deep

Tell whether the points represent a **linear**, an **exponential**, or a **quadratic** function. Check by plotting the points, (by hand or with a graphing calculator). (Lesson 8.6)

12.  $(-3, 4), (-2, 1), (-1, 0), (0, 1), (1, 4)$  Quadratic

13.  $(-4, 0), (-2, 1), (0, 2), (2, 3), (4, 4)$  Linear

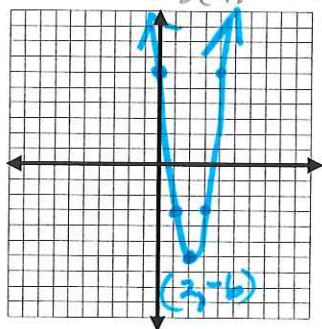
14.  $(-3, -6), (-2, -1), (-1, 2), (0, 3), (1, 2)$  Quadratic

Graph each function. Describe the domain and range. (Lesson 8.3)

15.  $f(x) = 3x^2 - 12x + 6$

$$x = -\frac{-12}{2(3)} = \frac{12}{6} = 2$$

$$y = 3(2)^2 - 12(2) + 6 = 3(4) - 24 + 6 = -6$$



x	y
0	6
1	-3
2	-6
3	-3
4	6
5	21

16.  $y = -6x^2 - 12x - 5$

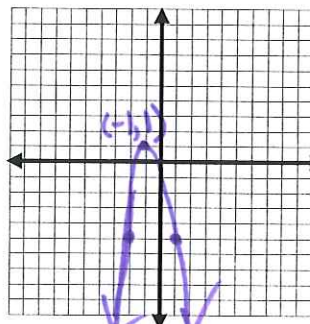
$$x = -\frac{-12}{2(-6)} = -\frac{12}{12} = -1$$

$$y = -6(-1)^2 - 12(-1) - 5$$

$$= -6(1) + 12 - 5$$

$$= -6 + 7$$

$$= 1$$



x	-3	-2	-1	0	1
y	-23	-5	1	-5	-23

$$y = -6(-2)^2 - 12(-2) - 5$$

$$= -6(4) + 24 - 5$$

$$= -24 + 24 - 5$$

$$= -5$$

$$y = -6(-3)^2 - 12(-3) - 5$$

$$= -6(9) + 36 - 5$$

$$= -54 + 36 - 5$$

$$= -23$$