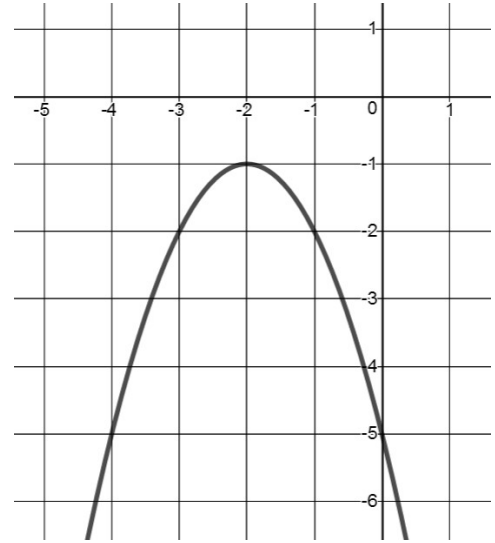


## Unit 8 Test Review

Name \_\_\_\_\_ Per \_\_\_\_\_

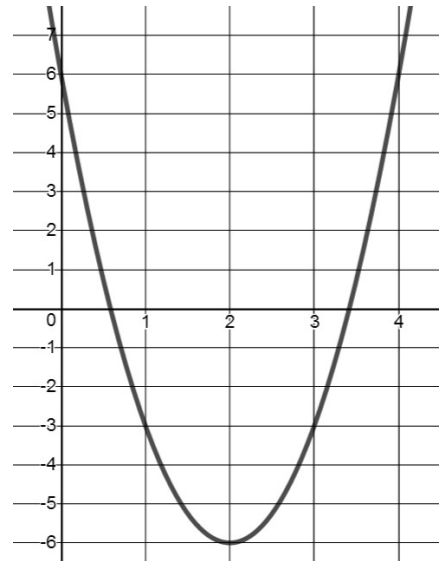
1. Use the graph to the right.

- What is the vertex?
- What is the axis of symmetry?
- For  $x < -2$ , is the function increasing or decreasing?
- For  $x > -2$ , is the function increasing or decreasing?
- What is the equation of this parabola in vertex form?
- Is the vertex a maximum or minimum?



2. Use the graph to the right.

- What is the vertex?
- What is the axis of symmetry?
- For  $x < 2$ , is the function increasing or decreasing?
- For  $x > 2$ , is the function increasing or decreasing?
- What is the equation of this parabola in vertex form?
- Is the vertex a maximum or minimum?



3. Given the equation  $f(x) = 2x^2 + 10x - 9$ .

- What is the y-intercept?
- Is it concave up or down?
- What is the axis of symmetry?
- Determine the rate of change, from  $x_1 = 0$  to  $x_2 = 3$ .

4. Given the equation  $g(x) = -x^2 + 12x + 35$ .

- What is the y-intercept?
- Is it concave up or down?
- What is the axis of symmetry?
- Determine the rate of change, from  $x_1 = -2$  to  $x_2 = 1$ .

5. Given the equation  $p(x) = -(x + 3)^2 - 10$ .

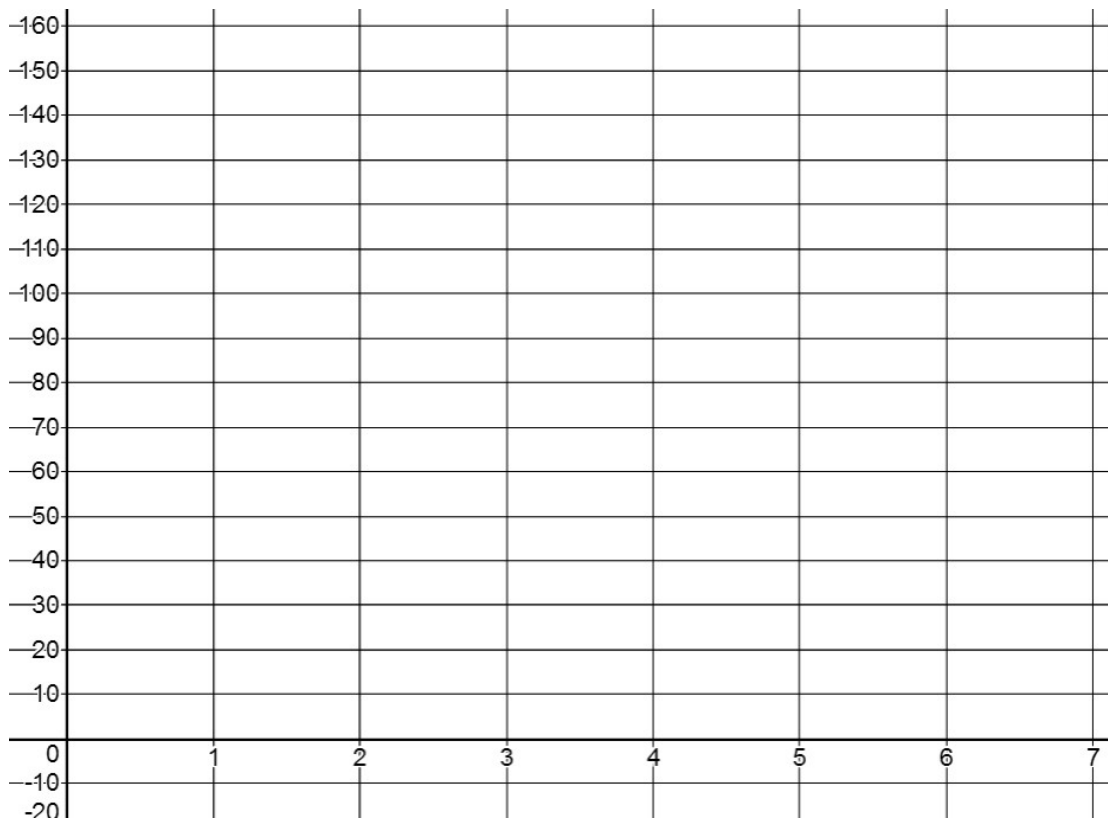
- Vertex
- Axis of Symmetry
- Minimum or maximum?
- $p(2) = \underline{\hspace{2cm}}$
- Standard form of the equation
- y-intercept
- State the transformations in words

6. Given the equation  $q(x) = 2(x - 1)^2 - 3$ .

- Vertex
- Axis of Symmetry
- Minimum or maximum?
- $q(-1) = \underline{\hspace{2cm}}$
- Standard form of the equation
- y-intercept
- State the transformations in words

7. Mickey shoots Donald Duck out of a cannon. Donald Duck's height (in feet) can be modeled by the equation  $h(t) = -16t^2 + 96t + 6$  where  $t$  is time in seconds. The equation can also be written in vertex form as  $h(t) = -16(t - 3)^2 + 150$ .

- a. What is the initial height of Donald Duck?
- b. How long does it take Donald to reach his maximum height?
- c. What is Donald's maximum height?
- d. Graph Donald Duck's trajectory on the graph below.



- e. About when does the Donald hit the ground?
- f. What is Donald's rate of change from 4 to 5 seconds?

8. The table of values on the right shows a quadratic function.

x	f(x)
-7	-9
-6	-2
-5	
-4	6
-3	7
	6
-1	3

a. Fill in the blanks.

b.  $f(-6) =$

c.  $f(1) =$

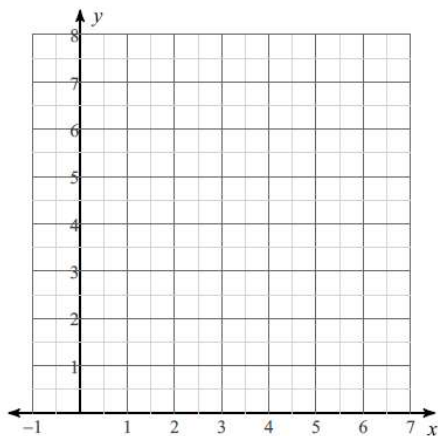
d. vertex

e. axis of symmetry

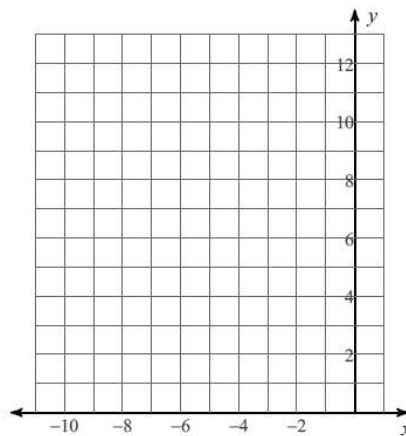
f. y-intercept

Graph the following parabolas using transformations. Be sure to include the axis of symmetry.

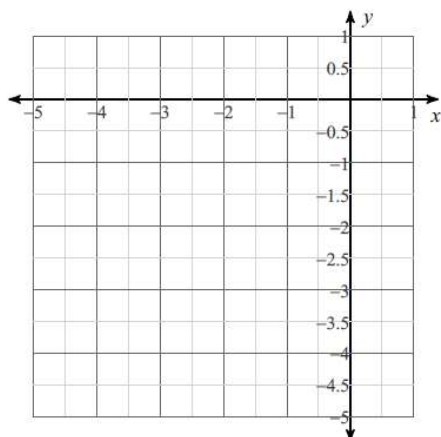
9)  $f(x) = (x - 3)^2 + 3$



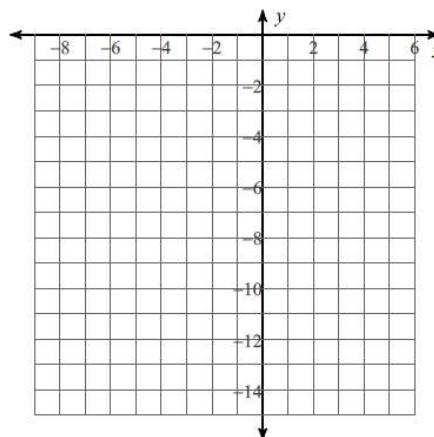
10)  $f(x) = 2(x + 1)^2 + 4$



11)  $f(x) = \frac{1}{2}(x + 2)^2 - 3$



12)  $f(x) = -3(x - 4)^2 - 2$



**Change the following factored form to the standard form.**

$$13) y = (x - 3)(x + 7)$$

$$14) y = -2(x + 4)(x - 5)$$

**Change the following vertex form to the standard form.**

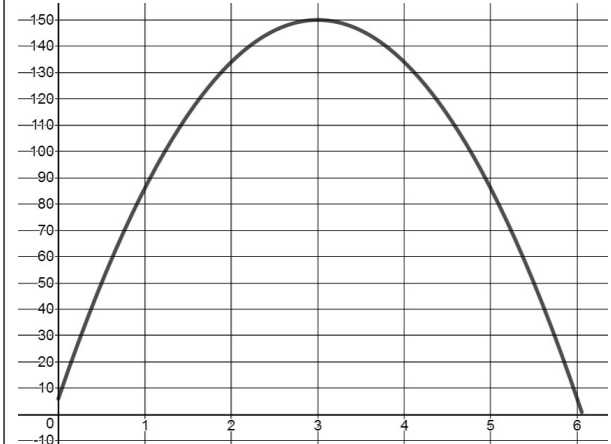
$$15) y = (x + 8)^2 - 1$$

$$16) y = -2(x - 3)^2 - 4$$

**Answer Key**

<p>1. a. (-2,-1)          b. <math>x = -2</math>          c. increasing          d. decreasing          e. <math>y = -(x+2)^2 - 1</math>          f. maximum</p>	<p>2. a. (2,-6)          b. <math>x = 2</math>          c. decreasing          d. increasing          e. <math>y = 3(x-2)^2 - 6</math>          f. minimum</p>	<p>3. a. -9          b. concave up          c. <math>x = -5/2</math>          d. 16</p>
<p>4. a. 35          b. concave down          c. <math>x = 6</math>          d. 13</p>	<p>5. a. (-3,-10)          b. <math>x = -3</math>          c. maximum          d. -35          e. <math>p(x) = -x^2 - 6x - 19</math>          f. -19          g. reflect across x-axis, shift left 3, shift down 10</p>	<p>6. a. (1,-3)          b. <math>x = 1</math>          c. minimum          d. 5          e. <math>q(x) = 2x^2 - 4x - 1</math>          f. -1          g. vertical stretch by 2, shift right 1, shift down 3</p>

7. a. 6 ft  
 b. 3 seconds  
 c. 150 ft  
 d.

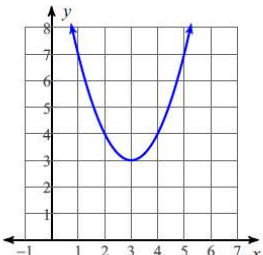


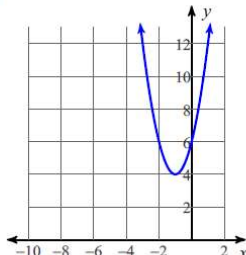
e. about 6.1 seconds  
 f. -48 ft/sec

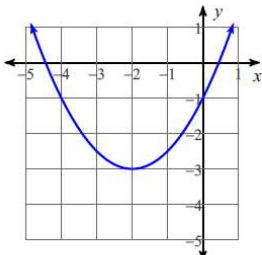
8. a.

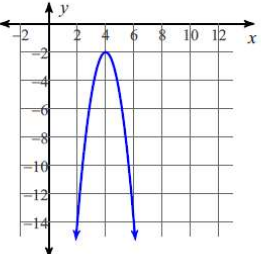
x	f(x)
-7	-9
-6	-2
-5	<b>3</b>
-4	6
-3	7
<b>-2</b>	6
-1	3

b. -2  
 c. -9  
 d. (-3,7)  
 e.  $x = -3$   
 f. -2

9) 

10) 

11) 

12) 

13)  $y = x^2 + 4x - 21$     14)  $y = -2x^2 + 2x + 40$     15)  $y = x^2 + 16x + 63$     16)  $y = -2x^2 + 12x - 22$