

For # 1 – 3, find the vertex for each quadratic function and tell whether each opens up or down.

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

2) $f(x) = \frac{1}{2}(x + 4)^2$

3) $g(x) = -6x^2 + 11$

Vertex:

Vertex:

Vertex:

Up or down?

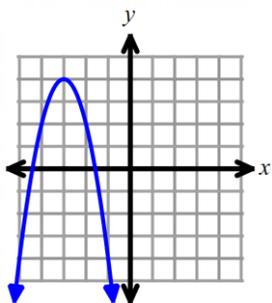
Up or down?

Up or down?

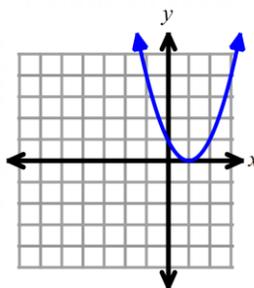
For #4 – 5, use the graph of each quadratic function to find the requested information.

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

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



Vertex:
Max or Min?
at what point?



Vertex:
Max or Min?
at what point?

For #6 – 7, find the domain and range for the described quadratic function.

6) The function graphed in #4.

7) The function graphed in #5.

Domain:

Domain:

Range:

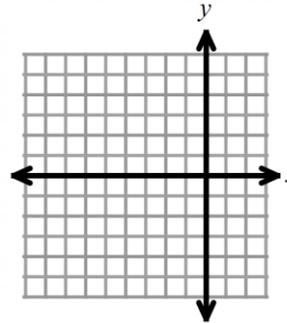
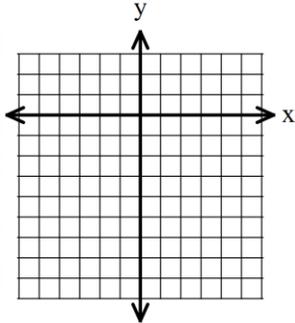
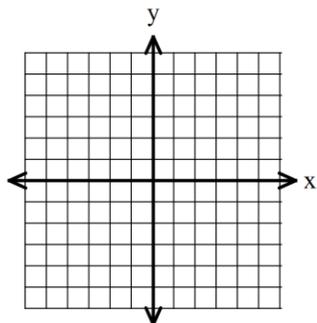
Range:

For #8 – 10, graph each quadratic function. Include the vertex and two other points.

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

9) $y = -(x - 2)^2 - 3$

10) $y = \frac{1}{2}(x + 4)^2 - 1$



For #11 – 12: Use the quadratic function graphed to the right.

11) What is the range of the function?

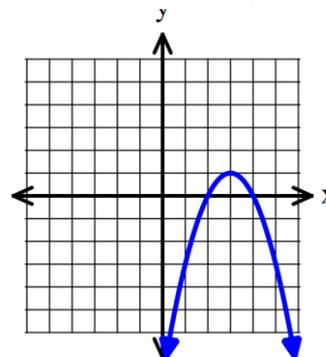
12) Multiple Choice: What is the equation of the function?

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

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

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

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



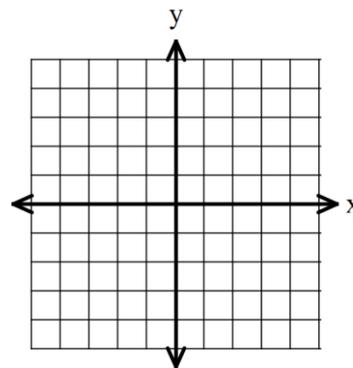
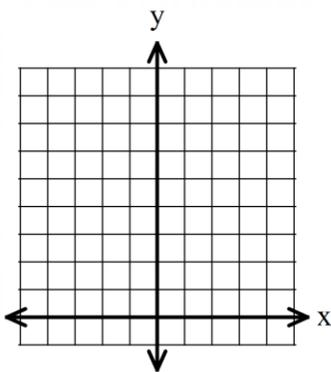
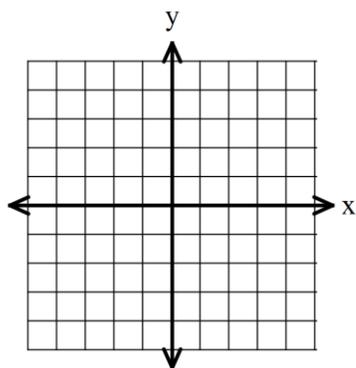
11.1 Worksheet, continued!

For #13 – 15: Describe the transformations from $y = x^2$, and sketch the function.

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

14. $y = \frac{1}{3}x^2 + 4$

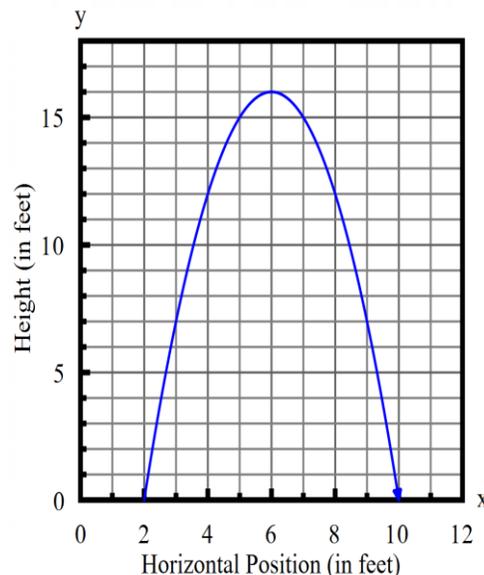
15. $y = -2x^2$



For #16 – 17: A football is placed on the ground and then kicked into the air. Its height y can be modeled by $y = -(x - 6)^2 + 16$, where x is the horizontal position in feet and y is the height in feet.

16) What is the maximum height reached by the football?

17) At what horizontal position, in feet, is the max height reached?



11.1 Self-Reflection

A) What are you needing additional help with from the 11.1 lesson?

B) What is a goal that you have for this unit?

For #1 – 3: Find the missing value that would make the trinomial a perfect square.

1) $x^2 + 4x + \underline{\hspace{2cm}}$

2) $x^2 - 8x + \underline{\hspace{2cm}}$

3) $x^2 + 2x + \underline{\hspace{2cm}}$

4) Factor the trinomial from #1.

5) Factor the trinomial from #2.

6) Factor the trinomial from #3.

For #7 – 10: Complete the square to rewrite each equation in vertex form.

7) $y = x^2 + 6x + 10$

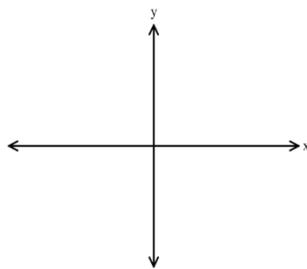
8) $y = x^2 + 12x - 10$

9) $y = -2x^2 + 8x - 11$

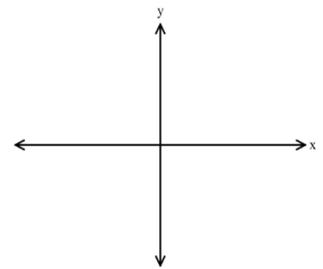
10) $y = 3x^2 - 24x + 5$

For #11 – 12: Complete the square to rewrite the equation in vertex form. Then sketch each quadratic function. Include the vertex.

12) $y = x^2 + 14x - 15$

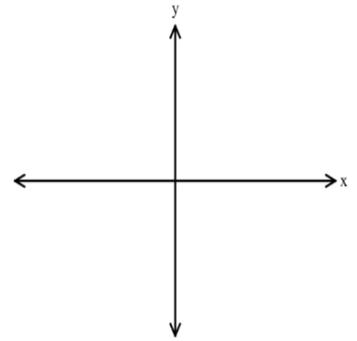


12) $y = x^2 - 18x + 6$



Worksheet 11.2, continued.

13) Find the domain and range of the quadratic function: $y = x^2 - 8x + 12$. Hint: complete the square and sketch the graph first.”



14) What are the coordinates of the vertex of the function $h(x) = -x^2 - 2x + 4$?

15) Using $h(x)$ from #14, is the vertex going to be a max or a min? How do you know?

11.2 Self-Reflection

A) **How much do you agree with this statement?** I showed persistence on this assignment, because I tried the problems that were hard for me, and I gave my best effort even when it was challenging.

1) strongly disagree 2) disagree 3) agree 4) strongly agree

B) **How much do you agree with this statement?** When I felt frustrated on this assignment, I was able to calm myself down and then focus on trying the problems.

1) strongly disagree 2) disagree 3) agree 4) strongly agree

C) **How much do you agree with this statement?** When I needed help on this assignment, I used **appropriate** resources (such as my notes, watching a video, getting help from others) to try to understand the material.

1) strongly disagree 2) disagree 3) agree 4) strongly agree

D) Are you proud of your effort on this assignment? Why or why not?

For #1 – 3, find the x -intercepts and y -intercepts for each quadratic function.

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

2) $f(x) = x^2 + 4x + 3$

3) $g(x) = -2x^2 + 50$

x-intercepts:

x-intercepts:

x-intercepts:

y-intercept:

y-intercept:

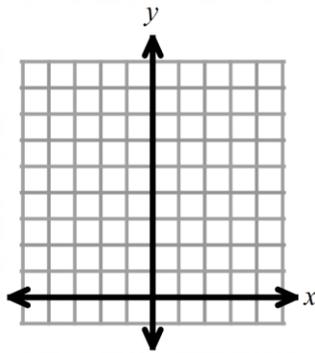
y-intercept:

For #4 – 7, sketch the graph of the given function. Include the x -intercepts and y -intercept.

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

5) $f(x) = x^2 + 6x + 8$

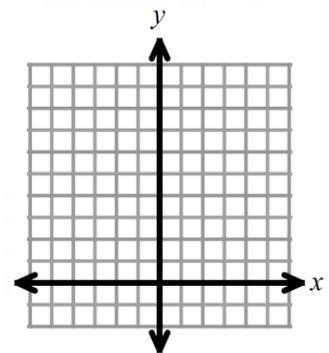
x-intercepts:



y-intercept:

x-intercepts:

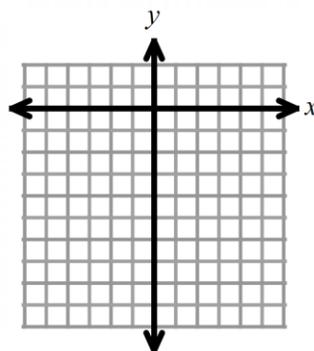
y-intercept:



6) $y = x^2 - 9$

7) $y = -(x - 2)(x + 4)$

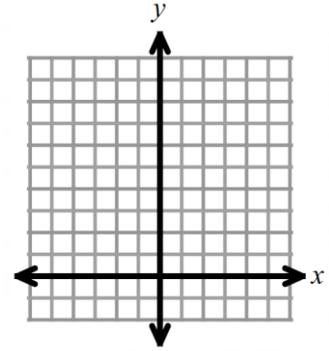
x-intercepts:



y-intercept:

x-intercepts:

y-intercept:



8) Which statement(s) below are true for the function $y = -4x^2 + 12x$? Choose all that apply.

- A) The y -intercept is 12.
- B) The x -intercepts are at 0 and 3.
- C) The function opens downward.
- D) The x -intercepts are 4 and 12.
- E) The y -intercept is 0

11.3 Worksheet is continued on the next page.

11.3 Worksheet, continued.

For #9 – 12, find the x -intercepts and y -intercept for each quadratic function.

9) $y = x^2 - x - 30$

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

11) $y = 6x^2 + 5x + 1$

12) $g(x) = -4(x + 1)(x - 2)$.

11.3 Self-Reflection

A) What level of frustration did you experience while doing this assignment?

0	1	2	3	4
No frustration	A small amount of frustration	Frustrated half the time	Frustrated most the time	Frustrated all of the time

B) How confident were you on each of the following portions of the assignment? Use the scale below.

0	1	2	3	4
Not confident	Slightly confident	Confident half the time	Confident most the time	Confident all of the time

Portion	Confidence Scale Value
Finding the x –intercept(s) from Intercept Form	
Graphing from Intercept Form	
Finding the y –intercept from Standard Form	
Finding the y –intercept from Intercept Form	
<p>List the resources you used, if any. Some options can include referencing your notes, using a calculator, asking a friend or family member for help, or finding a video on the internet to help you.</p>	

C) Are you proud of your effort on this assignment? Why or why not?

Examples 1 – 4: Convert each quadratic function to the requested form.

1) $y = 5(x - 4)(x - 1)$; Standard Form

2) $y = -2(x - 3)^2 + 1$; Standard Form

3) $f(x) = x^2 + 12x - 4$; Vertex Form

4) $g(x) = x^2 + 2x - 15$; Intercept Form

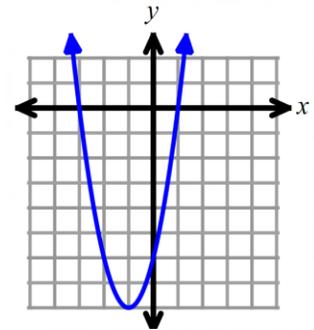
5) Find the vertex from #3.

6) Find the y –intercept from #1.

7) Find the x –intercepts from #4.

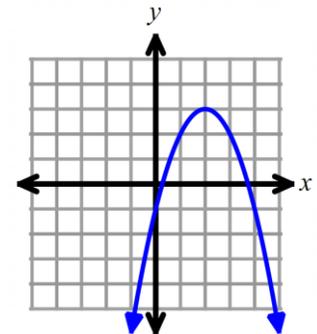
8) What is the equation of the quadratic function graphed to the right?

- A) $y = 2(x - 3)(x + 1)$
- B) $y = -2(x + 3)(x - 1)$
- C) $y = 2(x + 3)(x - 1)$
- D) $y = -2(x - 3)(x + 1)$



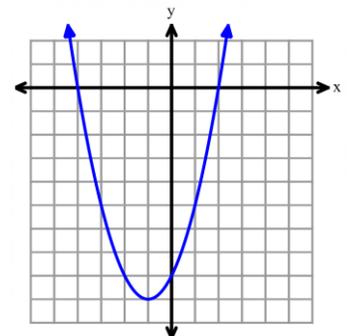
9) What is the equation of the quadratic function graphed to the right?

- A) $g(x) = (x - 2)^2 + 3$
- B) $g(x) = -(x - 2)^2 + 3$
- C) $g(x) = -(x - 2)(x - 3)$
- D) $g(x) = (x - 2)(x - 3)$



10) What is the equation of the quadratic function graphed? **Choose all that apply.**

- A) $y = (x + 1)^2 - 9$
- B) $y = -(x - 1)^2 - 9$
- C) $y = (x + 4)(x - 2)$
- D) $y = x^2 + 2x - 8$
- E) $y = (x - 4)(x + 2)$



11.4 Worksheet, continued.

For #11 – 13: Given the quadratic function $f(x) = x^2 + 6x + 5$

11) Find the x -intercepts. Hint: factor

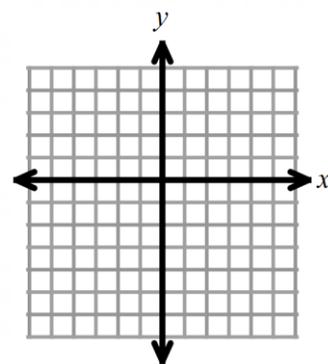
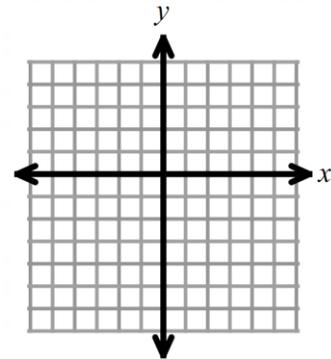
12) Find the vertex. Hint: complete the square

13) What is the y -intercept?

14) Graph $f(x)$.

15) Explain why $y = x^2 + 1$ does not have any x -intercepts.

16) Graph $y = x^2 + 1$. Show the vertex and the y -intercept.



11.4 Self-Reflection

A. How confident were you on each of the following portions of the assignment? Use the scale below.

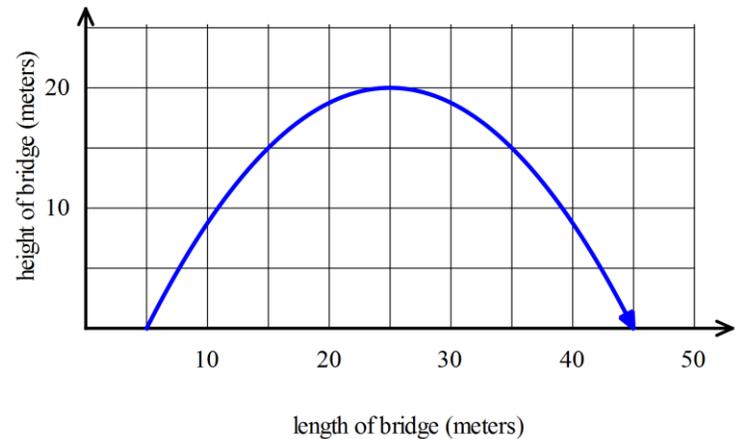
0 1 2 3 4
 Not confident Slightly confident Confident half the time Confident most the time Confident all of the time

Portion	Confidence Scale Value
Converting forms to Standard Form	
Factoring to convert to Intercept Form	
Completing the Square to convert to Vertex Form	
Sketching the graph of a quadratic function	

B. How are you doing so far at being a persistent learner in this class? What are things that you are doing to support your learning? What are things you still need to work on?

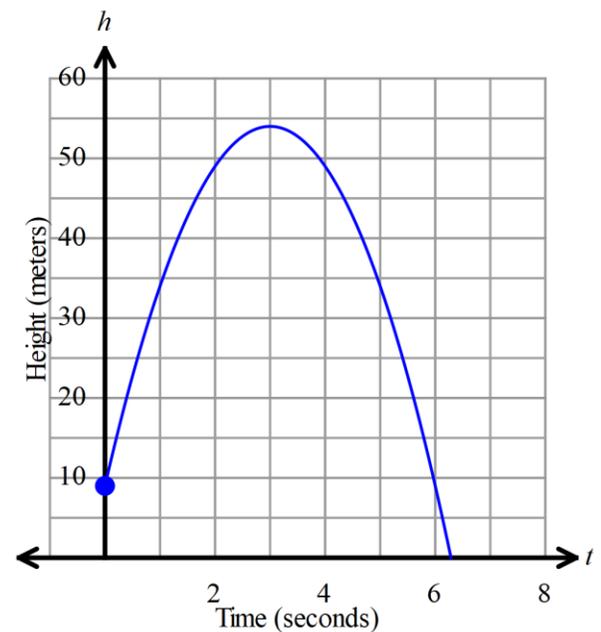
For #1– 3: The height of a bridge can be modeled by $h(x) = -\frac{1}{20}(x - 25)^2 + 20$, where x is the horizontal length in meters, and $h(x)$ is the height in meters.

- 1) What is the height of the bridge at its tallest point?
- 2) What is the length of the bridge when the height is at its maximum?
- 3) What is the height of the bridge when the width is 15 meters?



For #4 – 6: A model rocket is launched from the roof of a building. Its height can be found by using $h(t) = -5t^2 + 30t + 9$, where h is its height in meters and t is the time after the launch in seconds, as shown in the graph.

- 4) Find the starting height of the rocket from the roof of the building.
- 5) At a time of 1 second, how high will the rocket be?
- 6) Find the time when the rocket hits the ground. Use the Quadratic formula, and round to one decimal place.



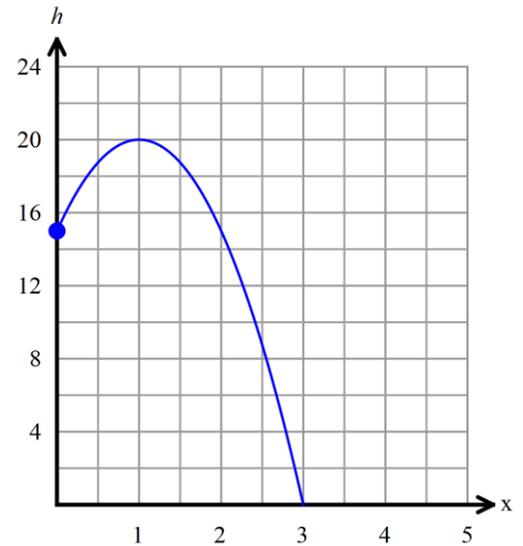
For #7 – 8: A football is kicked in the air, and its path can be modeled by the equation $f(x) = -2(x - 3)^2 + 56$, where x is the time, in seconds, after the football is kicked. $f(x)$ is the height, in feet.

- 7) What is the maximum height reached by the football?
- 8) At what time is the maximum height reached?

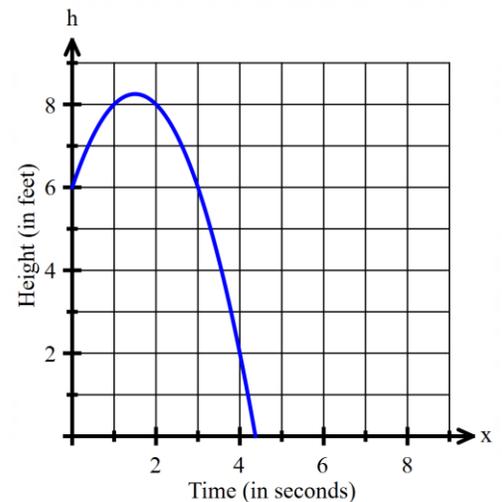
11.5 Worksheet continued.

For #9 – 12: Armand throws a stone off a bridge into a river below. The stone's height, in meters above the water, x seconds after it is thrown, is modeled by $h(x) = -5x^2 + 10x + 15$, which is graphed to the right.

- 9) Find the height of the stone when Armand throws it.
- 10) At what approximate time would the stone have a height of 12 meters?
A) 2 seconds B) 2.3 seconds
C) 2.5 seconds D) 3 seconds
- 11) At what time did the stone land in the river? Use the graph.
- 12) Find the height of the stone after 2 seconds. Use the equation for $h(x)$.



- 13) Torie stands on a diving board and jumps into a pool. Her height can be modeled by $y = -x^2 + 3x + 6$, where x is her horizontal distance and y is her height above the water, in feet. Use the quadratic formula to find the time when she hits the water in the pool. Round to two decimal places.



11.5 Self-Reflection

Did you use any resources on this assignment to help you be successful?

List the resources you used, if any. Some options can include referencing your notes, using a calculator, asking a friend or family member for help, or finding a video on the internet to help you.

Are you proud of your effort on this assignment? Why or why not?

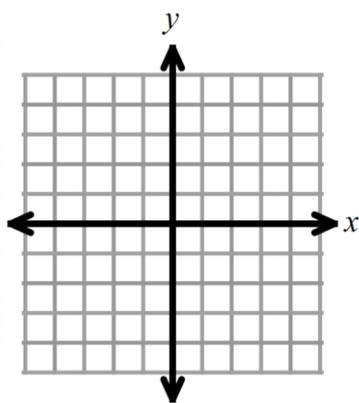
For # 1 – 2, sketch each quadratic function and find the requested information.

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

Vertex:

Max or Min?

at what point?

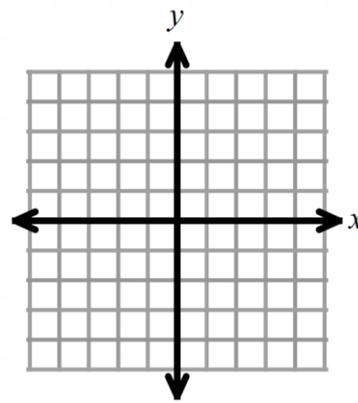


2) $f(x) = 2(x - 3)^2$

Vertex:

Max or Min?

at what point?

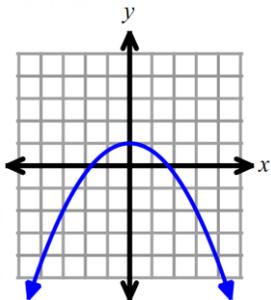


For #3 – 4, use the graph of each quadratic function to find the domain and range.

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

Domain:

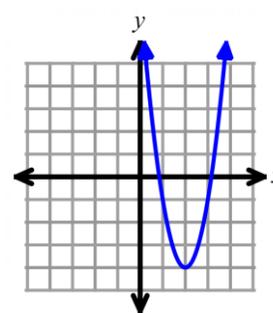
Range:



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

Domain:

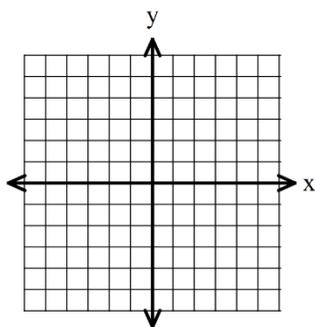
Range:



For #5 – 6, describe the transformations from $y = x^2$, and sketch the given quadratic function.

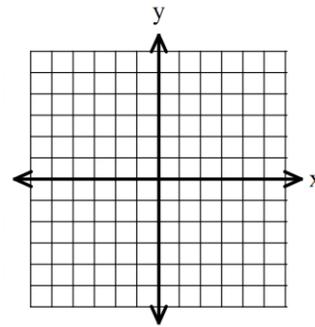
5) $y = \frac{1}{3}x^2 - 2$

Transformations:



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

Transformations:

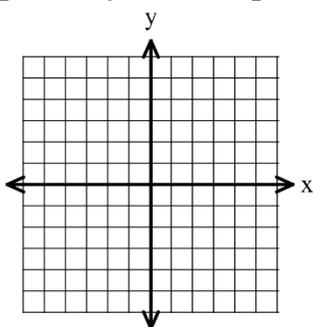


For #7 – 8, find the x –intercepts and y –intercept, and sketch each function.

7) $y = -2x(x - 3)$

x –intercepts:

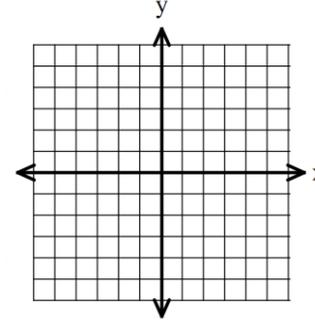
y –intercept:



8) $y = x^2 - 2x - 3$

x –intercepts:

y –intercept:



Ch 11 Review Worksheet, continued.

For #9 – 10: Write each quadratic in vertex form by completing the square.

9) $y = x^2 + 10x - 3$

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

For #11 – 14: Convert each quadratic function to the requested form.

11) $y = 3(x + 5)(x - 7)$; standard form

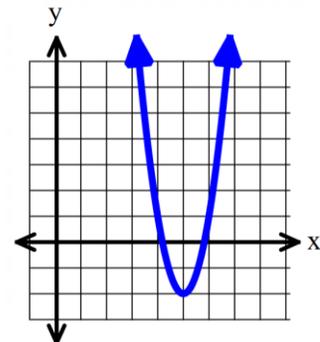
12) $y = 2(x - 1)^2 + 4$; standard form

13) $y = x^2 - 8x + 15$; vertex form

14) $y = -5x^2 + 20$; intercept form

15) What is the equation of the quadratic function graphed to the right?

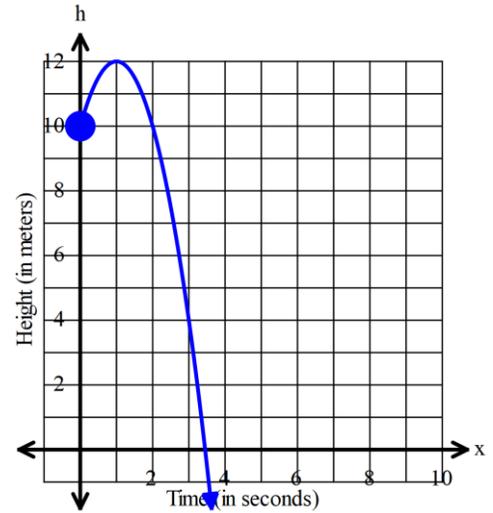
- A) $y = -3(x - 5)^2 + 2$
- B) $y = 3(x + 5)^2 + 2$
- C) $y = -3(x - 5)^2 - 2$
- D) $y = 3(x - 5)^2 - 2$



Ch 11 Review Worksheet continued.

For #16 – 21, Tiffany stands on a balcony and throws a ball to her dog, who is at ground level. The ball's height, in meters above the ground, x seconds after Tiffany threw it, is modeled by $h(x) = -2x^2 + 4x + 10$.

- 16) What is Tiffany's height when she throws the ball?
- 17) What is the height of the ball at 3 seconds after it is thrown?
- 18) What is the maximum height of the ball?
- 19) At what time is the maximum height of the ball reached?
- 20) At what time is the ball at a height of 4 meters?
- 21) Find the time that the ball hits the ground by using the Quadratic Formula. Round to two decimal places.



22) What is the equation of the quadratic function graphed? **Select all that apply.**

- A) $y = -(x - 4)(x + 2)$
- B) $y = (x + 4)(x - 2)$
- C) $y = -x^2 + 2x + 8$
- D) $y = -x^2 - 2x - 8$
- E) $y = -(x - 1)^2 + 9$
- F) $y = -(x + 1)^2 - 9$

