Secondary Math 2 Honors Name_____

4.1 Quadratic Applications

Date_____ Period____

Sketch the graph of each function, labeling the dimensions of your window. Then identify each key feature.

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

2) Is the vertex a max or a min?

Vertex:

y-intercept:

x-intercept(s):

Coordinate point at $x = -10$:

3) $y = x^2 + 7x + 8$

4) Is the vertex a max or a min?

Vertex:

y-intercept:

x-intercept(s):

Coordinate point at $x = -10$:

5) $y = -x^2 + x + \frac{3}{4}$

6) Is the vertex a max or a min?

Vertex:

y-intercept:

x-intercept(s):

Coordinate point at $x = -10$:

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

8) Is the vertex a max or a min?

Vertex:

y-intercept:

x-intercept(s):

Coordinate point at $x = -10$:

9) $y = -2x^2 - 6x - 3$

10) Is the vertex a max or a min?

Vertex:

y-intercept:

x-intercept(s):

Coordinate point at $x = -10$:

11) $y = x^2 + 9x + 21$

12) Is the vertex a max or a min?

Vertex:

y-intercept:

x-intercept(s):

Coordinate point at $x = -10$:

Use the graph in the problem to answer each question.

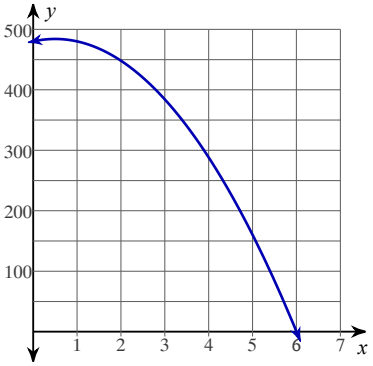
13) Jason jumped off of a cliff into the ocean in Acapulco while vacationing with some friends. His height as a function of time could be modeled by the function below. where x is the time in seconds and h is the height in feet.

a. Estimate how long it took Jason to reach his maximum height? _____

b. What was the highest point that Jason reached? _____

c. Jason hit the water after how many seconds? _____

d. About what was Jason's height after 2.5 seconds? _____



Answer each question below.

14) A rocket is launched from atop a 192 foot cliff with an initial velocity of 64 ft/s represented by the equation $h = -16t^2 + 64t + 192$.

a. Sketch a graph of the situation. Be sure to label your axes.

b. What is the maximum height of the rocket? _____

c. How long will it take the rocket to reach it's maximum height? _____

d. How high is the rocket after 2.5 seconds? _____

e. How long will it take the rocket to hit the ground after it is launched? _____

e. What is an appropriate domain and range for this situation?

15) You are trying to dunk a basketball. You need to jump 2.5 feet in the air to dunk the ball. The height that your feet are above the ground is given by the function $h = -16t^2 + 12t$.

a. Sketch a graph of the situation. Be sure to label your axes.

b. What is the maximum height your feet will be above the ground? _____

c. Will you be able to dunk the basketball? Explain.

d. What is an appropriate domain and range for this situation?

16) A diver is standing on a platform 24 feet above the pool. He jumps from the platform with an initial upward velocity of 8 ft/s. Use the formula $h = -16t^2 + 8t + 24$, where h is his height above the water, and t is the time.

a. Sketch a graph of the situation. Be sure to label your axes.

b. What is the maximum height of the diver? _____

c. How long did it take the diver to reach the maximum height? _____

d. How long will it take for him to hit the water? _____

e. What is an appropriate domain and range for this situation?

17) One of the games at a carnival involves trying to ring a bell with a ball by hitting a lever that propels the ball into the air. The height of the ball is modeled by equation $h = -16t^2 + 38t$.

a. Sketch a graph of the situation. Be sure to label your axes.

a. What is the maximum height the ball will reach? _____

b. If the bell is 25 feet above the ground, will it be hit by the ball? _____

c. What is an appropriate domain and range for this situation?