Secondary Math 2 Honors   Name_____

4.3 Writing Quadratic Equations

Date_____ Period____

Write the quadratic equation for the following.

1) x - intercepts of $(2, 0)$ and $(-4, 0)$ and passes through the point $(-1, -3)$.

2) x - intercepts of $(-7, 0)$ and $(5, 0)$ and passes through the point $(-2, 10)$.

3) Vertex: (-1,9) and passes through the point (3, 7)

4) Vertex: (3,-3) and passes through the point (7,-9)

Given the following scenario, write an equation that would model each parabolic curve.

5) The cables of the Golden Gate Bridge create a parabola. The towers are 600 feet apart and 80 feet tall. The cable touches the road halfway between the towers. Write an equation that models the curve.

6) Audrey throws a ball in the air, and the path the ball makes is modeled by a parabola, measured in feet. After 6 seconds the ball reaches it's maximum height of 35 feet. If Aubrey lets go of the ball 4 feet off of the ground, what is the equation of the line that models this curve?

7) Landon joined the circus and his act is to walk the tight rope. When he is in the middle of the 60 foot rope, the rope sags by 3 feet. As he walks along the rope, his path forms a parabolic curve. What equation would model this curve if the tightrope platform stands 50 feet off of the ground?

8) A parabolic stream of water is spraying out of a hole in the floor two feet behind Veronica. The water is passing over her at a height of six feet. It then lands on the floor 18 feet in front of her. Write the equation for the stream of water.

9) Part of a playground jungle gym has a metal arch. The arch has various footholds to make it climbable. One of these footholes is 2 feet off the ground and 2 feet from the end of the arch. If the ends of the arch are 7 feet apart, what is the equation that can model the arch?

10) As your friend does a backbend, you notice that it makes the shape of a parabola. When bent over, your friends hands are 2 feet away from her feet. The highest spot of the backbend is halfway between her feet at 2.5 feet. Find the equation to model the backbend.

11) A ball is thrown into the air. The path of the ball is represented by the equation $h = -(t - 4)^2 + 16$ where h represents height and t represents time.

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

    b. What is the ball's maximum height? _____

    c. How long does it take for the ball to hit that maximum height? _____

    d. How high will the ball be after 5 seconds? 2 seconds? _____

    e. At what time will the ball bounce on the ground? _____

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