1. **BOATING** Miranda has her boat docked on the west side of Casper Point. She is boating over to the Casper Marina. The distance north traveled by Miranda over time can be modeled by the equation $N = -16t^2 + 66t$, where N is the number of feet she travels north in t minutes.

   a. Graph this equation.

   b. What is the maximum number of feet north that she traveled?

   c. How long did it take her to reach Casper Marina?

2. **GOLF** The average amateur golfer can hit a ball with an initial velocity of 31.3 meters per second. If the ball is hit straight up, the height can be modeled by the equation $h = -4.9t^2 + 31.3t$, where h is the height of the ball, in feet, after t seconds.

   a. Graph this equation.

   b. At what height is the ball hit?

   c. What is the maximum height of the ball?

   d. How long did it take for the ball to hit the ground?

   e. State a reasonable range and domain for this situation.

3. **FUNDRAISING** The marching band is selling poinsettias as a fundraiser to buy new uniforms. Last year the band charged \$5 per poinsettia, and they sold 150. They want to increase the price this year, and they estimate that they will lose 10 sales for each \$1 increase in the price. The sales revenue R, in dollars, generated by selling the poinsettias is given by the function $R = (5 + p)(150 - 10p)$, where p is the number of \$1 increases in the price.

   a. Write the function in standard form.

   b. Find the maximum value of the function.

   c. At what price should the poinsettias be sold to generate the most sales revenue? Explain your reasoning.

4. **FOOTBALL** A football is kicked up from ground level at an initial velocity of 90 feet per second. The equation $h = -16t^2 + 90t$ gives the height h of the football after t seconds.

   a. What is the height of the ball after one second?

   b. When is the ball 126 feet high?

   c. When is the height of the ball 0 feet? What do these points represent in the context of the situation?

5. **SOCCER** A soccer ball is kicked from ground level at an initial velocity of 90 feet per second. The equation $h = -16t^2 + 90t$ gives the height h of the ball after t seconds. (Lesson 9-1)

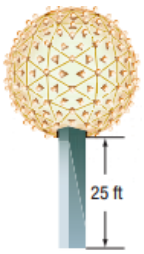
   a. What is the height of the ball after one second?

   b. How many seconds will it take for the ball to reach its maximum height?

   c. When is the height of the ball 0 feet? What do these points represent in the context of the situation?

6. **BASEBALL** Juan hits a baseball straight up. The equation $h = -16t^2 + 120t$ models the height h, in feet, of the ball after t seconds. How long is the ball in the air? (Lesson 9-2)

7. **PARTIES** Della's parents are throwing a Sweet 16 party for her. At 10:00, a ball will slide 25 feet down a pole and light up. A function that models the drop is $h = -t^2 + 5t + 25$, where h is height in feet of the ball after t seconds. How many seconds will it take for the ball to drop? (Lesson 9-5)



8. **CONSTRUCTION** Christopher is repairing the roof on a shed. He accidentally dropped a box of nails from a height of 14 feet. This is represented by the equation $h = -16t^2 + 14$, where h is the height in feet from the ground and t is the time in seconds. Describe how the graph of this function is related to $h = t^2$. (Lesson 9-3)