Name _____ Date _____

Quadratic Applications

1. A softball is thrown upward with an initial velocity of 32 feet per second from 5 feet above ground. The ball's height, h, in feet above the ground is modeled by $h = -16t^2 + 32t + 5$, where t is the time in seconds after the ball is released.

   a) Find the maximum height of the ball after it is thrown.

   b) Find the amount of time it takes for the ball to hit the ground (after it has been thrown).

2. Suppose a ball is thrown from a height of 15 meters with an initial velocity of 20 m/sec. The position of the ball is given by $h = -4.9t^2 + 20t + 15$.

   a) Sketch a graph of the situation.

   b) How high in the air is the ball after 3 seconds?

   c) What time does it hit the ground?

3. The path of a baseball is given by the function $f(x) = -0.0032x^2 + x + 3$ where *f(x)* is the height of the baseball in feet and *x* is the distance from home plate in feet.

   a) What is the maximum height reached by the baseball?

   b) What is the horizontal distance from home plate when the ball hits the ground?

   c) What is the height at a distance of 100 feet?

   d) What is the distance when the height is 50 feet?