1. The height of a ball in feet x seconds after it is thrown is given by $f(x) = -16x^2 + 32x + 5$.

     a. When will the ball reach the ground?

     b. When will the ball reach a height of 7 feet?

2. The fuel economy in miles per gallon of a certain vehicle is given by $f(x) = -0.01x^2 + 1.2x – 5.8$, where x is the car's speed in miles per hour. For what speed(s) does the car have a fuel economy of 22 miles per gallon?

3. A foul ball leaves the end of a baseball bat and travels according to the formula $h(t) = -16t^2 + 64t$ is the height of the ball in feet and t is the time in seconds.

      a. Find the maximum height reached by the ball.

      b. Determine when the foul ball will hit the ground.

4. A café's daily income depends on x, the number of customers. The function $I(x) = 4x^2 - 20x$ describes the café's total daily income. The function $C(x) = 2x^2 + 5$ describes the total amount the café spends in a day. The café's daily profit $P(x)$ is the difference between the daily income and the amount spent in a day.

      a. Write a function to describe $P(x)$. (Hint: Profit = Income – Costs).

      b. Determine the number of customers needed for the café to break even on a daily basis.
      (Hint: Profit = $0 at the break even point)