Pre Calc
Chapter 2
sec 2.1

Quadratic Applications

Solve each of the following. Include the window in which you found your solution.

1. A company's revenue is modeled by the equation $R = -15p^2 + 300p + 12000$, where p is the price in dollars of the company's product.
   a) What price will maximize revenue
   b) What is the max revenue?

2. The motion of a projectile fired straight up is modeled by $h(t) = 64t - 16t^2$ where height is in feet, time is in seconds.
   a) How long does projectile take to reach max height?
   b) What is the max height?
   c) What is the vertical velocity when it hits the ground?

3. The equation for the cost in $ of producing auto tires is $C = .000015x^2 - .03x + 35$, where x is the number of tires.
   a) Find the number of tires that minimizes the cost.
   b) What is that cost?

4. A city is planning a playground. It wants to fence in a rectangular space using an existing wall. What is the greatest area it can fence in using 200 ft of donated fencing?

5. The Big Brick Bakery sells more bagels when it reduces prices, but then it changes its profits. The function $f(x) = -1000(x - .55)^2 + 300$ models the bakery's daily profits in dollars, from selling bagels, where x is the price of a bagel, in dollars.

a) Find the daily profit for selling bagels at $.40 each.
b) Find the daily profit for selling bagels at $.85 each.
c) At what price should the bakery sell its bagels to maximize profit?
d) What is the maximum profit?