More business problems.

1. Until recently, hamburgers at the city sports arena cost $4 each. The food concessionaire sold an average of 10,000 hamburgers on a game night. When the price was raised to $4.40, hamburger sales dropped off to an average of 8000 per night.
    a. Assuming a linear demand curve, find the price of a hamburger that will maximize the nightly hamburger revenue.
    b. If the concessionaire has fixed costs of $1000 per night and the variable cost is $0.60 per hamburger, find the price of a hamburger that will maximize the nightly hamburger profit.

2. The revenue function for a particular product is $R(q) = q(400 – q)$, where q is the quantity sold. Find the largest possible revenue.

3. Suppose that the demand equation for my paperclip business is
   $p = 100 - 0.01q$
   and the cost function is $C(q) = 50q + 10{,}000$. Graph the revenue and the cost as a function of quantity together on the same plot, and indicate on the q-axis where the break-even points occur.

4. The demand equation for a certain type of candy is $p = 2 – 0.01q$. Find the value of q and the corresponding price p that maximize the revenue.