

Name:

# SOLUTIONS

Math 1260 Quiz #7 - June 5, 2006

1. A chain saw rental firm charges \$12 plus \$1 per hour. Write a linear cost function for the situation. Identify all variables used.

$$h = \# \text{ hours}$$

$$C(h) = h + 12.$$

2. Let the supply and demand functions for strawberry-flavored licorice be given by:

$$p = S(q) = \frac{3}{2}q \quad p = D(q) = 81 - \frac{3}{4}q$$

where  $p$  is the price in dollars and  $q$  is the number of batches. Find the equilibrium quantity and the equilibrium price.

$$\frac{3}{2}q = 81 - \frac{3}{4}q$$

$$\frac{9}{4}q = 81$$

$$q = 36$$

$$p = \frac{3}{2}q = 54$$

$$\begin{aligned} \text{quantity} &= 36 \\ \text{cost} &= \$54 \end{aligned}$$

3. To produce  $x$  unites of a religious medal costs  $C(x) = 12x + 39$ . The revenue is  $R(x) = 25x$ . Both  $C(x)$  and  $R(x)$  are in dollars.

- Find the break even quantity.
- Find the profit from 250 units.
- Find the number of units that must be produced for a profit of \$130.

$$a. \quad 25x - (12x + 39) = 0$$

$$13x - 39 = 0 \quad \boxed{x = 3}$$

$$b. \quad P(x) = R(x) - C(x) = 13x - 39$$

$$P(250) = 13 \cdot 250 - 39 = 3250 - 39 = \$3211$$

$$c. \quad 130 = 13x - 39$$

$$169 = 13x$$

$$x = 13$$