

NAME: _____

Math 103L: Section 11.7. Exercise on elasticity, cost, revenue, profit, and maximal profit. The first few problems are the main exercise. The last 3 are just for practice.

1. The demand function at a price p is given by

$$f(p) = 4000 - 2p.$$

- (a) Find the elasticity of demand.
- (b) At what price is elasticity of demand unitary?
- (c) At $p = \$1000$: a price increase of 5% will create a demand decrease of what percent?

2. A company manufactures and sells x things per week with weekly price demand function: $p(x) = 40 - .1x$

(a) In $p(x) = 40 - .1x$, solve for x in terms of p to get a function $f(p)$ which gives the quantity demanded at each price p .

(b) Compute the elasticity of demand function for this price-demand function.

(c) Sum At $p = \$8$: a price increase of 10% will create a demand decrease of what percent?

3. Continuing with a company that manufactures and sells x things per week, the weekly price demand and cost functions are:

$$p(x) = 40 - .1x$$

$$C(x) = 5x + 2340$$

- (a) Find the marginal cost function $C'(x)$.

- (b) Find the Revenue function $R(x)$.

- (c) Find the Marginal revenue function $R'(x)$.

4. Continuing with a company that manufactures and sells x things per week. The weekly price demand and cost functions are:

$$p(x) = 40 - .1x$$

$$C(x) = 5x + 2340$$

Graph the Revenue and cost curves. You do not have to find the break-even points. (But it is not a bad idea to do this for practice.)

- (a) Draw in the axes, label them, and mark a scale;
- (b) Label $y = R(x)$, its x -intercepts, its maximum point with coordinates;
- (c) Label $y = C(x)$, its y -intercept and one other point on $y = C(x)$.
- (d) Shade the areas which correspond to the company making a profit make a bold line to represent the maximum profit graphically.

5. Continuing with a company that manufactures and sells x things per week. The weekly price demand and cost functions are:

$$p(x) = 40 - .1x$$

$$C(x) = 5x + 2340$$

Sum Find the production *level* that will realize that maximum profit.