Optimizing

1. The following gives the price per unit and the marginal costs (MC) for a company producing q units. Notice that the company provides additional discounts as the quantity of the order placed is increased. This tactic is often used to encourage buyers to buy more goods.

q	5000	6000	7000	8000	9000	10000
price/unit	60	58	56	55	54	53
MC	48	52	54	55	58	63

   (a) If current production is 6000 units, should production increase or decrease? Why?

   (b) Estimate the production level that would maximize profit.

2. Revenue is given by $R(q) = 450q$ and total cost is given by $C(q) = 10000 + 3q^2$.

   (a) At what quantity is profit maximized?

   (b) What is the total profit at this production level?

3. Price p and demand q for a certain product has been found to be $p = 45 - .01q$.

   (a) Write the revenue as a function of q.

   (b) Find the quantity that maximizes revenue. What is the price that corresponds to this quantity?

   (c) What is the total revenue at this price?

4. Get started on your practice problems or the WebHW8b. The available problems are:

WebHW8b	3	4	5	6	7
§4.3	32	33	39	20	21

   A word about presentations:

   Thursday there will be a chance to earn extra credit for the final exam. Groups of three can choose one of the problems below and use up to eight minutes to present the problem and its solution to the class. Up to 5 percentage points can be earned on this presentation and the point value will be determined by the following criteria:

   (a) Mastery of the problem: Do you understand the problem? Do you understand all of the steps in solving the problem? Would you be able to solve the problem if given a slightly different question?

   (b) Presentation of the problem: You are presenting *new* material to your classmates that will be on their quiz next week. Your peers need this time to be *taught* the material (not merely shown an example). Take care to explain the steps you take and why you take them.

   (c) Presentation: Do you interact with your audience? Do you make eye contact and not just stare at the board?

   (d) Fielding questions: Can you understand someone's question about the material and formulate a cohesive answer?