

ECO 401-002, 003
Spring 2011
Problem Set #7

Due: Friday, April 15

1. Suppose your uncle is athletics director at the University of Kentucky. For your birthday he gives you the monopoly rights to sell plastic wildcat hats at LadyCats basketball games. Your cost function is given by $C(Q) = 100 + Q^2$. The inverse demand function for plastic wildcat hats is given by $P(Q) = 40 - Q$. Q is the number of hats you sell at each game.
 - a) What price should you charge in order to maximize profits? How many hats will you sell? What will your profits be?
 - b) Illustrate the total cost, total revenue, and profit functions in a diagram. Explain how the $MR = MC$ condition is illustrated in this diagram.
2. You work for a company that produces and sells ready-to-eat cereal to the general public. The marketing department has discovered that there are two types of customers, those who are very price sensitive and who scour the newspaper for discount coupons, and those who are not price sensitive and who never use coupons. Own-price elasticity of demand for the first group is 5 and for the second group is 2. The marginal cost per box of cereal is \$2. Your boss approaches you and asks how to use this information to set the shelf price for cereal, as well as the size of the discount for coupon users.
3. Each year a new group of high school seniors chooses where they want to attend college. The University of Kentucky faces two identifiably different categories of customers, in-state and out-of-state students. The (inverse) demand equation for in-state students is given by $P_I = \$9000 - Q_I$, while demand by out-of-state students is given by $P_O = \$21,000 - 9Q_O$. P represents the annual tuition charged by UK and Q represents the number of students who enter as freshmen. The marginal cost of educating an additional student is constant and equal to \$3000. Suppose that the Board of Trustees wants to act as a profit-maximizing monopolist in setting price and output. What tuition should they charge for in-state and out-of-state students, and how many of each would enroll each year? Illustrate your answer in the diagram below.
4. Section 2 of the Sherman Antitrust Act (1890) makes it illegal to monopolize or attempt to monopolize a market. What is the economic basis for this legal hostility to monopoly? Explain with a diagram that compares the market outcome under competition with that under monopoly.