

EE311: Problem Set, Semester 1/2014

Instruction:

- 1) Form a group of 2-3 persons.
- 2) Do brainstorming and tackling all questions below.
- 3) Submit your group work on Friday 28 November 2014 in class
- 4) Any questions, drop me your message at pwrasai@gmail.com

(Rule of Thumb for Monopoly Pricing)

1. A monopolist firm faces a demand with constant elasticity of -2.0 . It has a constant marginal cost of \$20 per unit and sets a price to maximize profit. If marginal cost should increase by 25 percent, would the price charged also rise by 25 percent?

(Multiplants Firm)

2. A firm has two factories for which costs are given by:

$$\text{Factory \#1: } C_1(Q_1) = 10Q_1^2$$

$$\text{Factory \#2: } C_2(Q_2) = 20Q_2^2$$

The firm faces the following demand curve:

$$P = 700 - 5Q$$

where Q is total output – i.e., $Q = Q_1 + Q_2$.

- a. On a diagram, draw the marginal cost curves for the two factories, the average and marginal revenue curves, and the total marginal cost curve (i.e., the marginal cost of producing $Q = Q_1 + Q_2$). Indicate the profit-maximizing output for each factory, total output, and price.
- b. Calculate the values of Q_1 , Q_2 , Q , and P that maximize profit.
- c. Suppose that labor costs increase in Factory 1 but not in Factory 2. How should the firm adjust (i.e., raise, lower, or leave unchanged) the following: Output in Factory 1? Output in Factory 2? Total output? Price?

(Monopoly Power)

3. A monopolist faces the demand curve $P = 11 - Q$, where P is measured in dollars per unit and Q in thousands of units. The monopolist has a constant average cost of \$6 per unit.
 - a. Draw the average and marginal revenue curves and the average and marginal cost curves. What are the monopolist's profit-maximizing price and quantity? What is the resulting profit? Calculate the firm's degree of monopoly power using the Lerner index.
 - b. A government regulatory agency sets a price ceiling of \$7 per unit. What quantity will be produced, and what will the firm's profit be? What happens to the degree of monopoly power?

(Two-Part Tariff)

4. As the owner of the only tennis club in an isolated wealthy community, you must decide on membership dues and fees for court time. There are two types of tennis players. “Serious” players have demand

$$Q_1 = 10 - P$$

where Q_1 is court hours per week and P is the fee per hour for each individual player. There are also “occasional” players with demand

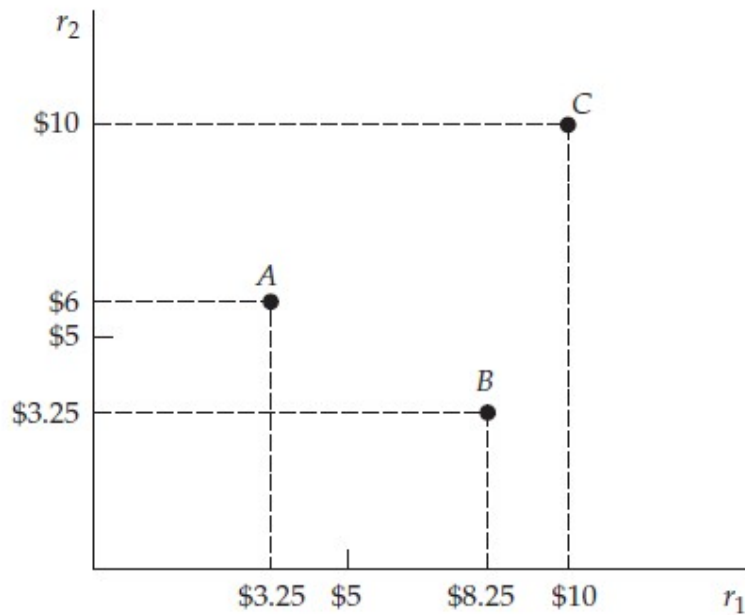
$$Q_2 = 4 - 0.25P.$$

Assume that there are 1000 players of each type. Because you have plenty of courts, the marginal cost of court time is zero. You have fixed costs of \$10,000 per week. Serious and occasional players look alike, so you must charge them the same prices.

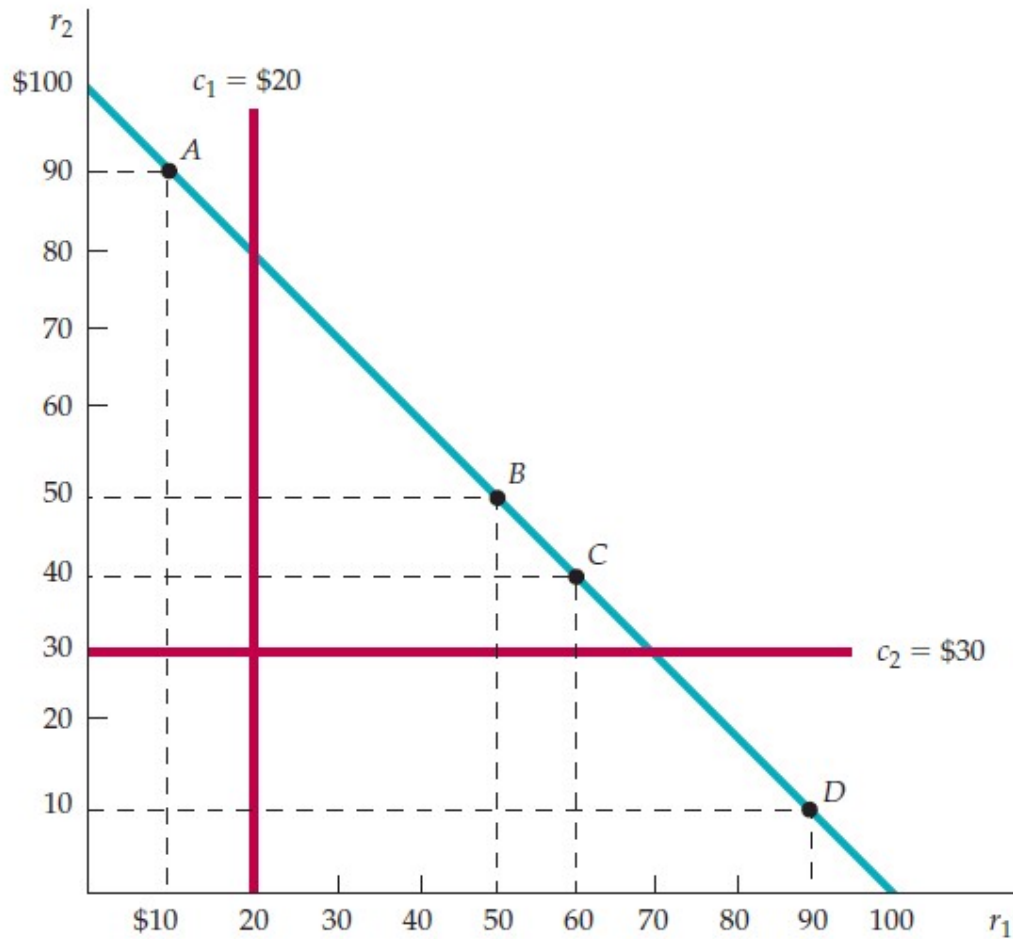
- a. Suppose that to maintain a “professional” atmosphere, you want to limit membership to serious players. How should you set the *annual* membership dues and court fees (assume 52 weeks per year) to maximize profits, keeping in mind the constraint that only serious players choose to join? What would profits be (per week)?
- b. A friend tells you that you could make greater profits by encouraging both types of players to join. Is your friend right? What annual dues and court fees would maximize weekly profits? What would these profits be?
- c. Suppose that over the years young, upwardly mobile professionals move to your community, all of whom are serious players. You believe there are now 3000 serious players and 1000 occasional players. Would it still be profitable to cater to the occasional player? What would be the profit-maximizing annual dues and court fees? What would profits be per week?

(Bundling)

5. Look again at Figure 11.12 as shown below , which shows the reservation prices of three consumers for two goods. Assuming that marginal production cost is zero for both goods, can the producer make the most money by selling the goods separately, by using pure bundling, or by using mixed bundling? What prices should be charged?



6. Look again at Figure 11.17 (p. 418). Suppose that the marginal costs c_1 and c_2 were zero. Show that in this case, pure bundling, not mixed bundling, is the most profitable pricing strategy. What price should be charged for the bundle? What will the firm's profit be?



---“Practice makes perfect.”---