

Problem Set 4 (due date: 11.11.2013)

1. A nightclub owner has both student and adult customers. The demand for drinks by a typical student is $Q^S = 18 - 3P$. The demand for drinks by a typical adult is $Q^A = 10 - 2P$. There are equal numbers of students and adults. The marginal cost of each drink is $c = 2$.

- What price will the owner set if he cannot discriminate at all between the two groups? What will be his total profit at this price?
- If the club owner could separate the groups and practice third-degree price discrimination what price per drink would be charged to members of each group? What would be the club owner's profit in this case?

Now suppose that the club owner can “card” patrons and determine who among them is a student and who is not and, in turn, can serve each group by offering a cover charge and a number of drink tokens to each group.

- What will be the cover charge and the number of tokens for the students? What will be the cover charge and number of tokens given to adults? What is the club owner's profit under this regime?
 - Calculate the average price per drink for each group and compare your result with b).
2. A monopolist with constant marginal costs $c = 20$ makes a loss, because high fixed costs are incurred. The demand schedule of each of n identical consumers is $x = 100 - p$.
- Up to now the monopolist has charged the profit maximizing linear price. Which profit contribution was thereby obtained?
 - Which tariff reform would you as a consultant suggest? Calculate the profit maximizing two part tariff $T(x) = f + p x$, where f is a fixed fee and p the per-unit price. What is the ensuing profit? How has consumer utility changed after this reform?

3. A producer of copying machines has a monopoly. To leverage his monopoly of copying machines into the production of copy paper, the copying machine is designed in such a way that only his own paper can be used, which is produced with constant marginal costs $c = 5$. There are two types of consumers whose demand for copy paper (given they own a copy machine) is described by the inverse demand functions $p = k_i - x$, $i = 1, 2$, with $k_1 = 145$ and $k_2 = 205$; x is the amount of copies.

- What is the maximum price f of the copying machine if both consumers should buy it and the price of copy paper is p per unit?
- What is the optimal price f of the copying machine and p for one copy if the firm serves both types? Is it optimal to serve both types?
- Could the firm do better with second degree price discrimination by using block pricing and offering packages? (Only short qualitative answer required!)

- d) What is the price of the copying machine if there remains to be a monopoly in the market for copying machines but if competitive imitators supply one sheet of paper for a price of c ? Is it optimal in this case to serve both types?
4. A monopolist with marginal costs of zero serves two types of consumers. For simplicity we assume that each type of consumer can be represented by one consumer. The marginal willingness to pay is $p = z - x$ for the one and $p = 2z - x$ for the other consumer.
- a) Which pricing policy would you as the manager of this firm pursue under the constraint that you can only choose between a linear price and a two-part tariff? Explain by calculating the profits.
- b) Would you as a regulatory authority, for which not the profit but only the social surplus counts, oppose the above decision?