

Price Discrimination: Exercises Part 1

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Problem 1

A monopolist sells in two markets. The inverse demand curve in market 1 is

$$p_1 = 200 - q_1$$

while the inverse demand curve in market 2 is

$$p_2 = 300 - q_2.$$

The firm's total cost function is

$$c(q_1 + q_2) = (q_1 + q_2)^2$$

The firm is able to price discriminate between the two markets.

- (b) What quantities are sold in the two markets?
- (a) What price will it charge in each market?

Problem 2

Suppose a supplier can identify two distinct groups of customers, students and non-students. The demand by students q_s and the demand by nonstudents q_n are given by

$$q_s = 100 - 8p_s$$

and

$$q_n = 100 - 4p_n$$

respectively. The total demand $q_t = q_s + q_n$ is then

$$q_t = 200 - 12p$$

The supplier's cost of £2 per unit is constant regardless of the number of units supplied.

- (a) What price maximizes profits if the firm charges everyone the same price?
- (b) Show that the firm can secure greater profits by charging different prices for the two groups than it can secure by charging everyone the same price.
- (c) Graph the demand curves, the marginal revenue curves, the marginal cost curve and highlight the equilibria.

Problem 3

A monopolist has a cost function given by $c(q) = q^2$ and faces a demand curve given by $p(q) = 120 - q$.

- (a) What is his profit-maximizing output level? What price will the monopolist charge?
- (b) If a lump-sum tax of £100 were put on this monopolist, what would be its profit-maximizing output level?
- (c) If you wanted to choose a price ceiling for this monopolist so as to maximize consumer plus producer surplus, what price ceiling should you choose?
- (d) How much output will the monopolist produce at this price ceiling?
- (e) Suppose that you put a specific tax on the monopolist of £20 per unit of output. What would its profit-maximizing level of output be?