

1. (30%) A monopolistic manufacturer considers targeting two products, the high-end product and the low-end products, to two segments of consumers, the high-segment and the low-segment. The proportion of the low-segment is γ and that of the high-segment is $1-\gamma$. The valuation of the consumers in segment i to a product with quality q equals $\theta_i q$, $i=H, L, \theta_H > \theta_L$. All consumers will buy at most one unit of either the low-end product or the high-end product, but not both. When more than one product is available, a consumer will buy the product that maximizes his consumer surplus, provided his consumer surplus is nonnegative. The unit production cost of a product with quality q equals $C(q) = cq^2 / 2$. All other costs are assumed to be zero for simplicity.
- (i) If the manufacturer produces only one product and targets it to both segments, what would be the optimal price and the associated quality level for the product?
- (ii) Suppose the manufacturer decides to produce both the high-end product and the low-end product and target them to the two segments, respectively.
- (a) What would be the optimal prices of the two products so that consumers in each segment will indeed buy the product intended for them because the product gives them the higher consumer surplus? (b) What would be the optimal quality levels of the two products? (Note that the quality levels must be greater than zero). Compare them with that in (i). Explain the difference by providing some marketing implications. (c) Under what conditions will the manufacturer drop the low-end product? (d) Describe the market conditions under which it is optimal for the manufacturer to produce only one product. (e) In this situation, which segment should the manufacturer target the product to? Justify your answer. (No credit will be given for the answer providing no justification.)
2. (20%) Suppose a manufacturer faces two segments of consumers in the market, the high-valuation consumers (denoted by H-segment) and the low-valuation consumers (denoted by L-segment), which are of equal size. Consumers will buy only one unit of the product if the price is less than their willingness to pay. Their willingness to pay for the product is summarized as follows:

	H-segment	L-segment
Willingness to pay	\$4	\$5/2
Proportion	0.5	0.5

When the manufacturer distributes its product through a retailer, the former sets its wholesale price first, and given the wholesale price the latter sets its retail price to maximize its retail profits. For simplicity, assume that all costs equal zero. For each of

the following statements, judge whether it is true or not. **Only for statements (ii) and (iii), if it is not true, fill in the correct answer.**

- (i) If the manufacturer sells the product directly to consumers, then it should sell to both segments.
- (ii) Suppose that the manufacturer distributes its product through a local monopolistic retailer. Then in order to sell to the H-segment only, the manufacturer should set its wholesale price at \$4.
(True ; False, and the price should be _____.)
- (iii) Suppose that the manufacturer distributes its product through a local monopolistic retailer. Then in order to induce the retailer to sell to both segments, the manufacturer should set its wholesale price at \$5/2.
(True ; False, and the price should be _____.)
- (iv) The higher the proportion of the high-segment, the lower the wholesale price would be for inducing the retailer to serve both segments.
- (v) Compared with the direct channel, the existence of the retailer expands the market served by the manufacturer.
3. An oligopoly consists of n identical firms that produce a homogeneous product. Each firm i chooses its output, q_i to maximize its profits,
 $\Pi_i = p(Q)q_i - mq_i$
where m is the constant marginal (and average variable) cost for each firm, and p , the price, is a function of total industry output, $Q = \sum q_i$.
Please show the relationship between the Herfindahl-Hirschman index (HHI) and firms' price-cost margins. (15%)
4. Why some firms are dominant? If the reason is that the dominant firms have lower costs than fringe firms, please list the major causes of lower costs. (15%)
5. 解釋名詞：(20%)
- A. 平均成本定價法 (average cost pricing)
 - B. 學習曲線 (learning curve)
 - C. 囚犯的矛盾 (prisoner's dilemma)
 - D. 交易成本 (transaction cost)