

Mid-Term Examination

Subject	: MICROECONOMICS 1
Class	: Microeconomics 1 - D (Eng)
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Duration	: 180 minutes (3 hours)

Instructions

Answer all questions below, each question weighs 25 points

You are allowed to use scientific calculator to help you answers some of these questions (do NOT use calculator on your cellphone)

Problem 1

In a developing country, a large number of population with low income spend much of their income for food (x). The remaining portion of their income is spent on other goods and services (y). Given the strategic role of food consumption, the government intends to provide some supports to individuals of the low income category. However, it is still unclear what kind of supports the government is going to give. Two options are being considered: (1) direct cash transfer; and (2) price subsidy to both x and y.

Suppose Pak Munir is among those low income individuals. He faces the following utility function $U=xy$. For simplicity, assume that the per-unit price for x and y are the same, $P_x = P_y = 1,000$, and his total income is Rp100,000.

- If the government decides to provide Rp 20,000 cash transfer, what is the additional unit of utility Pak Munir is expected to gain? Show it in graph.
- If the government prefers to use price subsidy that will ensure Pak Munir still get the same size of additional unit of utility as in the case of cash transfer, what is the per-unit subsidy needed, and what would be the total government cost for providing that subsidy? Show it in graph. Notes: per-unit price subsidy = $[P_x \text{ before-subsidy}] - [P_x \text{ after-subsidy}]$.
- What happens with Pak Munir's utility if there is a middleman of the bad category in such a case?

Problem 2

A firm's output depends on how much inputs are employed. There are two categories of inputs: primary inputs (capital, labor, land, raw materials, and other resources) and intermediate inputs (unfinished products)

- In the case labor input, suppose a firm with production function $Y = L^{1/2}$ operates in a competitive market, where L = labor input, and Y is output. If the equilibrium wage rate is $w = 2$, the market price is $p = 12$, and the fixed cost is $F = 15$, derive the following functions: total cost, marginal cost, average total cost, and the firm's supply. Hints: derive first the optimal production and price. For the supply function derivation, pay attention on the shape of the average total cost and average variable cost

- b. In conventional microeconomics, the focus of producers' behavior is on "how much to produce" and "what input mix" is used. "Where to produce" (space and location question) is neglected. Yet, the optimal input mix can change when more than one alternative location is considered. The analysis based on location theory has shown that solving for the optimal location first and then for the optimal input mix (a sequential process) can be valid only if the production function is homothetic. Explain by using graph how optimal location and optimal output (input mix) can be derived, and what is the feature of homothetic production function?

Problem 3

City bus is a transportation run by the metropolitan city government. To anticipate that the number of bus rides will continue to increase, and realizing that city bus is the only public transportation the poor residents can afford to use, the city government is thinking to issue special cards for poor residents to allow them to use the bus free of charge. But prior to issuing the cards, some surveys are conducted to learn first about the demand pattern for that public transportation. It is revealed from those surveys that the monthly demand for bus rides for the poor residents $X^{\text{Non-poor}} = 100 - P$ and for the non-poor residents $X^{\text{Poor}} = 50 - (\frac{1}{2})P$. Through the same surveys, it is also revealed that the market supply curve for rides per month is $X_s = 3P$. Notes: P = price per ride and X = bus rides per month.

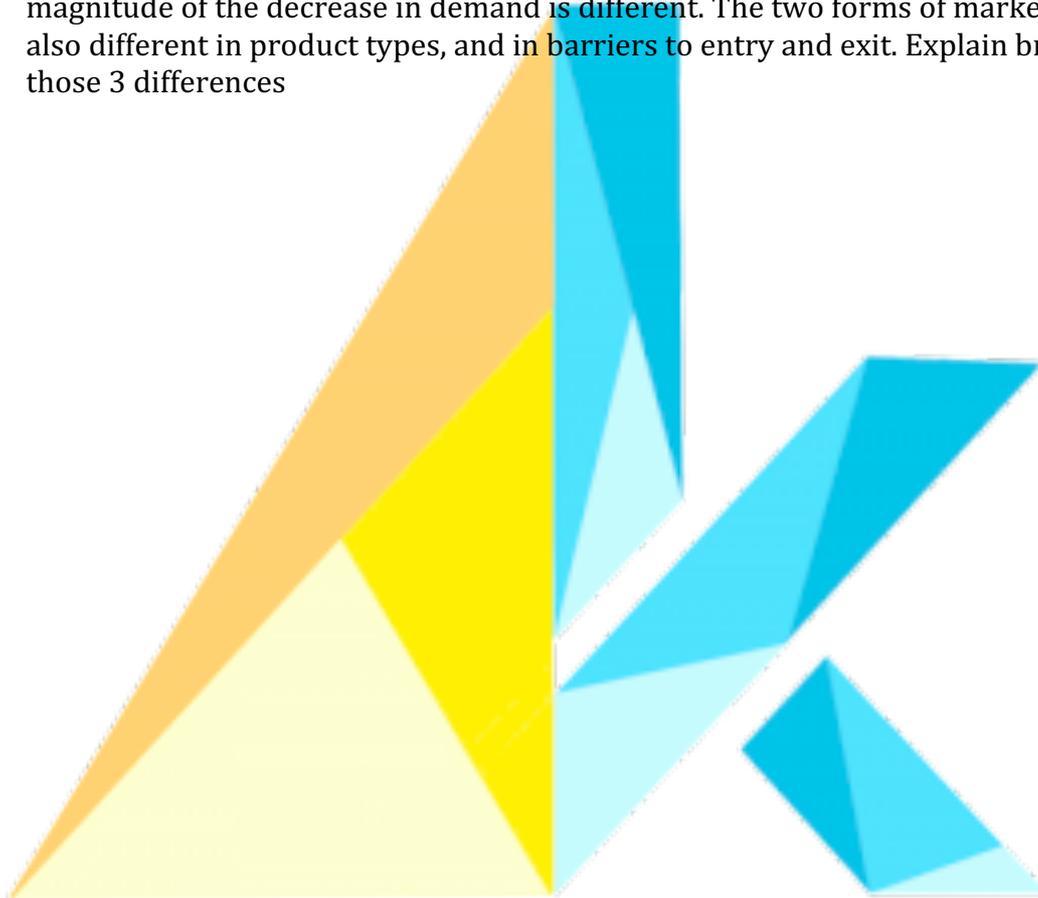
- A negative-slope demand curve, like the one above, does "not fall from the sky." Explain briefly the standard procedure to derive a demand curve that also leads to the derivation of indirect utility function
- Show the graph of the market demand curve for bus rides in that metropolitan city, and find the equilibrium price, market quantity of rides, and the number of rides taken by each (poor residents and non-poor residents)
- Having a clear picture about the market supply and market demand, the city government decides to issue the cards for the poor residents. Explain what happens in the market, particularly with the number of rides (of each residents' category) and the new equilibrium price per ride.
- In this case does bus transportation meet the conditions and the characteristics of public good?

Problem 4

A monopolistic firm will likely choose to produce at an output level that is lower and provide their product at a price that is higher than would result from a purely competitive industry. In particular, monopolist's price is greater than the marginal cost. While this will offer maximum profits to the monopolist, it is costly to the society at large. This is the reason why anti-monopoly and anti-trust law are adopted in many countries. Yet, imposing a ceiling price can also be done when monopoly is inevitable.

- Suppose the existing monopoly faces market demand $Q = 30 - P$ with a cost function $C(Q) = (\frac{1}{2}) Q^2$ and the ceiling price $P = 18$. Show the difference between the case without ceiling price and with ceiling price in terms of: output, profit, deadweight loss (DWL), consumer surplus (CS) and producer surplus (PS)

- b. If the government wishes to maximize the social welfare (summation of CS and PS), what is the level of ceiling price to be imposed, and what is the output level, profit and the DWL under such a scenario?
- c. Give an example of sector (activity) where monopoly often still exists, and what happens if the established ceiling price is below the firm's average total cost
- d. Monopolistic competition is highly relevant in emerging market economies because large manufacturing industries in those economies are often of that category. Although in both monopolistic competition and perfect competition demand for the product will decrease when prices increase, the extent or magnitude of the decrease in demand is different. The two forms of market are also different in product types, and in barriers to entry and exit. Explain briefly those 3 differences



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