KRITSANAWIT 6304640532
BOONKEAD

EC211 Assignment

Instructions

- Write down the answers digitally or on paper in order of question number. No need to rewrite the question but mark question numbers clearly.
- Export the answer sheet to PDF extension, or scan pages then convert to PDF.
- Submit via BE-Moodle within Tuesday, November 25th, 2020 before 23.59.

Question (1) Neo loves traveling. Supposed he has two choices of destination, Thailand and Maldives which costs him 3,000 baht and 5,000 baht respectively. His utility received from traveling to Maldives is twice compared to traveling to Thailand. Answer the following questions.

(1.a) If Neo has 10,000 baht of budget, how many times of each destination he will choose to travel and why? Draw his indifferent curve and budget line to analyze his decision and indicate details on the graph.

(1.b) If his budget increases to 20,000 baht, draw his income-consumption curve (ICC). Also plot his income demand of traveling in Thailand, find its slope and explain.

Question (2) Consider a long-run production in which there are only two inputs labor and capital, and the input prices for labor and capital are wage (w) and interest rate (r), respectively. Suppose that at the equilibrium levels of labor and capital (L^*, K^*), the marginal product of labor (MP_L) and marginal product of capital (MP_K) are 6 and 8, respectively.

(2.a) Calculate the marginal rate of technical substitution (MRTS), state the cost-minimization conditions of this firm, given that the required output is fixed at Q_0. If the market wage rate (w) is \$3, what is the interest rate at the equilibrium?

(2.b) Suppose now that the wage rate (w) increases to \$4, *ceteris paribus*, draw a diagram to illustrate the changes in the cost-minimizing combination of inputs.

Question (3) Consider a perfectly competitive market, in which the current equilibrium price is 150 baht per unit.

(3.a) Suppose that a firm in this market sells 20 units of its output. State the profit-maximizing condition of this firm and draw a diagram to illustrate how the equilibrium quantity is determined.

(3.b) At this equilibrium quantity of 20 units, suppose that the firm's average total cost is 180 baht and its average fixed cost is 60 baht. Calculate this firm's average variable cost, total revenue, total cost, and profit.

(3.c) From (3.b), should this firm stay in the market in the short run? Justify your answer.

(3.d) Suppose now that the market demand decreases and the market price decreases to 120 baht per unit. Draw two diagrams to illustrate: (i) the change in the equilibrium price and quantity in the market, (ii) how the change in the market price affects the firm equilibrium quantity and profit. Would your answer from part c. change?

Question (4) House and Land (HL) is the monopolist in a luxury housing market. It is a very efficient firm in which workers can construct houses with constant marginal cost and average cost. The demand and cost functions for HL are given as follows. (P is in million-baht unit).

$$P = 60 - 0.6Q$$

$$MC = AC = 24$$

(4.a) Derive the marginal revenue function. Draw a diagram to illustrate the demand, marginal revenue, marginal cost, and average cost.

(4.b) State the profit-maximizing condition for HL and determine the optimal units of houses. Also, indicate the profit in the diagram, and explain how this profit can be derived.

(4.c) The government tries to encourage more people to have access to luxury houses, so they launch a policy forcing HL to sell their houses at the ideal price. Draw another diagram to indicate the ideal price and determine the corresponding quantity at this price. Illustrate the social welfare before and after the intervention in the diagram and discuss.

Question (5) Consider this payoff matrix for Mook and Mix, they are competitors in an oligopoly sweetened product. Mook's payoff (bold) and Mix's payoff (regular) in this table is in thousand(s) baht unit. Discuss how you figure out a Nash equilibrium in this game.

		Mix		
		Boba tea (B)	Ice-cream (C)	Donut (D)
	Boba tea (B)	**1**, 2	**3**, 5	**2**, 1
Mook	Ice-cream (C)	**0**, 4	**2**, 1	**3**, 0
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Question (1) Neo loves traveling. Supposed he has two choices of destination, Thailand and Maldives which costs him 3,000 baht and 5,000 baht respectively. His utility received from traveling to Maldives is twice compared to traveling to Thailand. Answer the following questions.

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1) BL $\Rightarrow I = P_x X + P_y Y$

$10000 = 3000X + 5000Y$

* Slope BL $= \frac{3}{5}$

2) $MU_x = MU_y$

$2X = Y$

* Slope IC $= \frac{2X}{Y}$

3) Max U : $\frac{MU_x}{MU_y} = \frac{P_x}{P_y} \Rightarrow \frac{2X}{Y} = \frac{3}{5}$

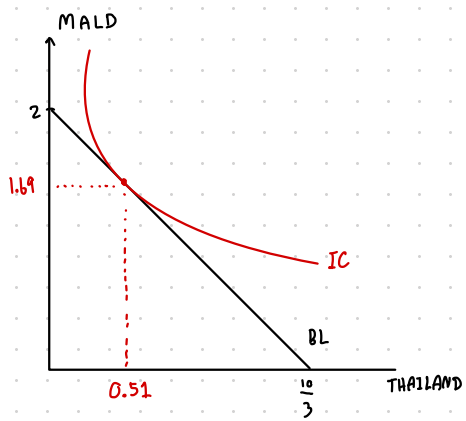
$\therefore X = 0.3Y$

4) BL : $10000 = 3000(0.3Y) + 5000Y$

$10000 = 900Y + 5000Y$

$\therefore X = \frac{30}{59} = 0.51$

$Y = \frac{100}{59} = 1.69$



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(2.a) Calculate the marginal rate of technical substitution (MRTS), state the cost-minimization conditions of this firm, given that the required output is fixed at Q_0. If the market wage rate (w) is \$3, what is the interest rate at the equilibrium?

(2 a) $MRTS = -\frac{MP_L}{MP_K} = -\frac{6}{8} = -0.75$

★ ISOQUANT เป็นเส้นตรง

★ at cost min : $\frac{MP_L}{w} = \frac{MP_K}{r}$

$\frac{6}{3} = \frac{8}{r}$

$\therefore r = 4$

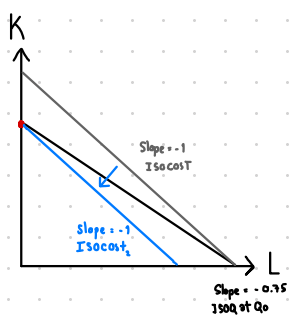
(2.b) Suppose now that the wage rate (w) increases to \$4, *ceteris paribus*, draw a diagram to illustrate the changes in the cost-minimizing combination of inputs.

(2b) $w \uparrow = 4$ ISOCOST slope = -1

$r = 4$

★ we use $K = \frac{TC}{4}$

$L = 0$



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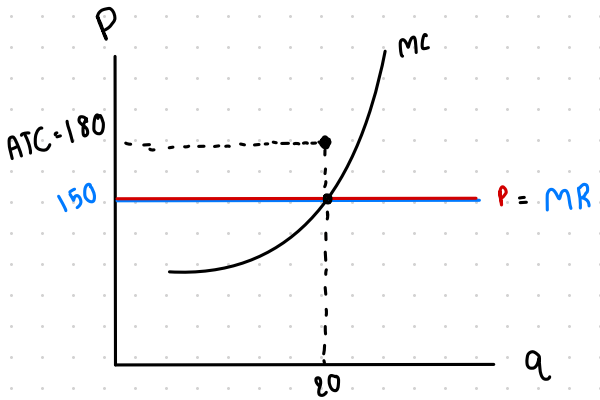
3a)



3b)

1) AVC = ATC − AFC
= 180 − 60 = 120

2) TR = 3000

3) TC = ATC × q
= 180 × 20
= 3600

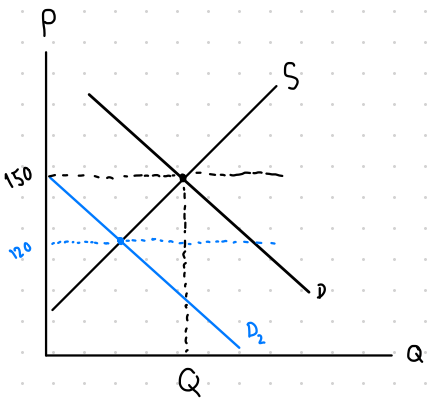
4) π = 3000 − 3600
= − 600 //

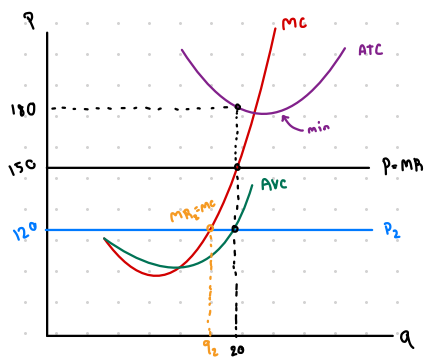
(3.c) From (3.b), should this firm stay in the market in the short run? Justify your answer.

(3.d) Suppose now that the market demand decreases and the market price decreases to 120 baht per unit. Draw two diagrams to illustrate: (i) the change in the equilibrium price and quantity in the market, (ii) how the change in the market price affects the firm equilibrium quantity and profit. Would your answer from part c. change?

3c) To stay in the market in the short run, price should be more than average variable cost. Since price (150) is more than AVC (120), therefore this firm should stay in the market in short run.

3d)





1) $D \downarrow \Rightarrow P \downarrow$ from 150 to 120

2) $MR_2 = 120 = MC \Rightarrow q \downarrow$ [20 to q_2]

3) Since $P = 120$

Still > min AVC

∴ firm still operate //

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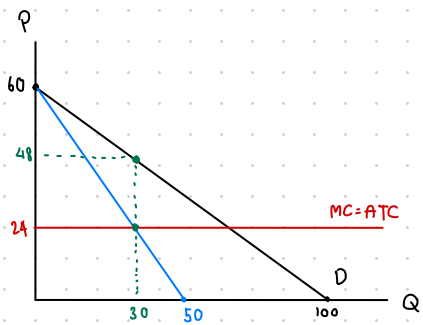
4a) $TR = P \times Q$

$= (60 - 0.6Q)Q$

$= (60Q - 0.6Q^2)$

$\therefore \frac{dTR}{dQ} = MR = 60 - 1.2Q$



4b) $MC = MR$

$24 = 60 - 1.2Q$

$1.2Q = 36$

$Q = 30$

$\therefore Q = 30 ; \; P = 60 - 0.6(30)$

$P = 42$

$\pi = TR - TC$

$= P \times Q - ATC \times Q$

$= (P - ATC) \times Q$

$= (48 - 24)30$

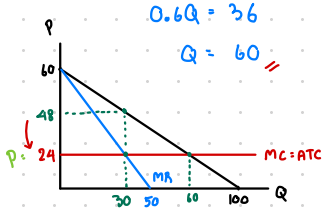
$= 720$

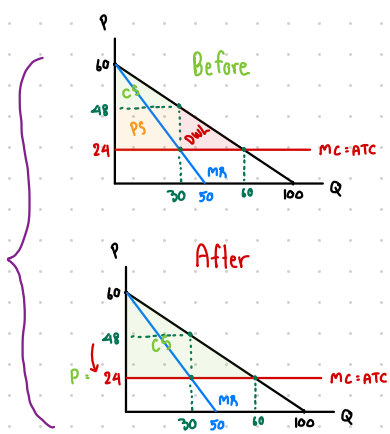
4c) if $P = 24$

$\therefore 24 = 60 - 0.6Q$

$0.6Q = 36$

$Q = 60$





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(2) **Mix**

(1) **Mook**

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★ ปิดแนวนอน ดูตัวหลัง : ถ้า (1) เลือก ... (2) จะเลือก...

ปิดแนวตั้ง ดูตัวหน้า : ถ้า (2) เลือก ... (1) จะเลือก...

if Mook (B) Mix choose (C)

if Mook (C) Mix choose (B)

if Mook (D) Mix choose (C)

if Mix (B) Mook choose (B)

if Mix (C) Mook choose (D)

if Mix (D) Mook choose (C)

$\therefore$ Nash Equilibrium [D, C] //