1. a)

uestions.

(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.

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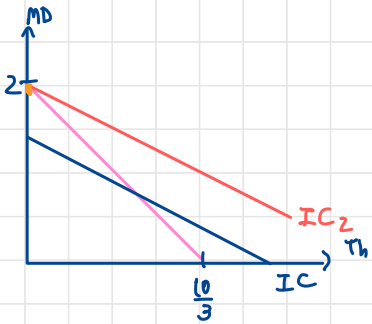


$2MU_x = MU_y$

$\frac{MU_x}{MU_y} = 0.5$ — slope IC

budget line : $10{,}000 = 3000x + 5000y$

$5000y = 3000x - 10{,}000$

$y = \frac{3000}{5000}x - 10{,}000$

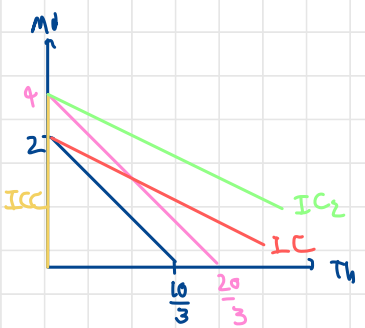
$y = 0.6$ slope BL.

∴ Neo will travel to Maldives 2 times since $\frac{MU_x}{MU_y} < \frac{P_x}{P_y}$ means that

slope of IC < BL

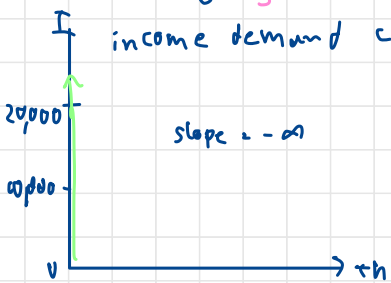
in order to get higher utility, neo will choose travel to Maldives instead of Thailand, so, he end up travelling to Thailand.

(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.



$20{,}000 = 3000x + 5000y$

$\frac{P_x}{P_y} = 0.15$ slope IC



slope = $-\infty$

if Neo's income increase

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?

$$MRTS = -\frac{MP_L}{MP_K}$$

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

$$= 0.75$$

cost minimization

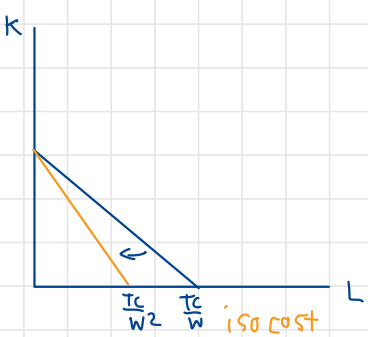
$$f(L_0, K_0) = Q_0$$

$$\cdot \quad \frac{MP_L}{MP_K} = \frac{w}{r}$$

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

$$\cdot \quad r = \frac{24}{6} = 4 \ \%$$

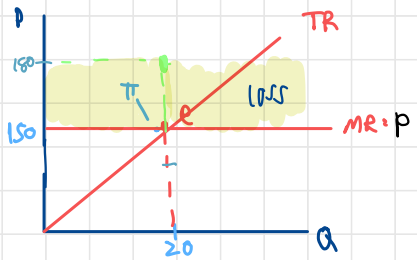
(2.b) Suppose now that the wage rate (w) increases to \$4, *ceteris paribus*, draw a diagram to illustrate the changes in the cost-minimizing combination of inputs.



if $w \uparrow = \frac{TC}{w} \downarrow$ = same cost but hired L ↓

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.



if ∏ maximize this firm

1) $\frac{d}{dx} f(20) = 0$

2) $\frac{d}{dx} f(20) \leq 0$

(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.

1) ATC = 180
AFC = 60
ATC = AFC + AVC
180 = 60 + VAC
∴ AVC = 120 ✓

2) TR = P · Q
TR = 150 · 20
TR = 3000 ✓

3) $\frac{TC}{Q} = ATC$ ∴ TC = 3600 ✓
$\frac{TC}{20} = 180$

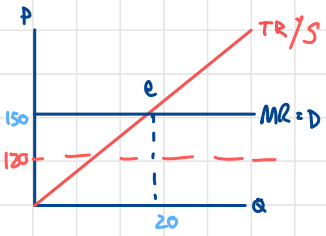
4) Profit
π(Q) = TR(Q) − TC(Q)
π = 3000 − 3600
π = −600 ✓

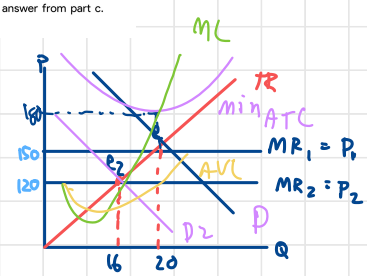
(3.c) From (3.b), should this firm stay in the market in the short run? Justify your answer.

yes, the firm should stay in the short run because P > AVC it means that total revenue can cover all of variable cost and some of fixed cost. the firm would loss just some of it fixed cost.

(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?

i)





$\frac{150}{20} = \frac{120}{x}$

$150x = 2400$

$x = \frac{2400}{150} = \frac{80}{5} = 16$

ii) the equillibrium quantity change to 16 and the profit change to -920.

$\pi_2 = TR_2 - TC_2$

$\pi_2 = 1920 - 2880$

$\pi_2 = -920$ #

$\frac{TC}{Q} = ATC$

$TC = 180 \cdot 16$

$TC = 2880$

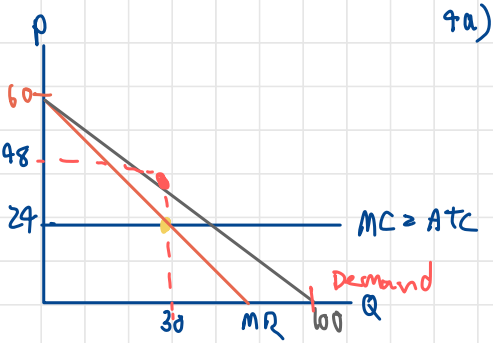
the firm could still stay in this market because P? min , it would loss total fixed cost. AVC

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.



4a) $TR = P \cdot Q$

$= (60 - 0.6Q)Q$

$TR = 60Q - 0.6Q^2$

$MR = \frac{dTR}{dQ} = 60 - 0.6Q$

$MR = MC$

$60 - 1.2Q = 24$

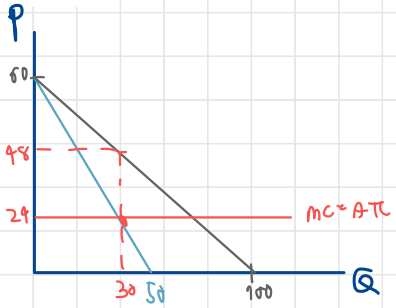
$Q = 30$

$P = 60 - 0.6(30)$

$= 48$

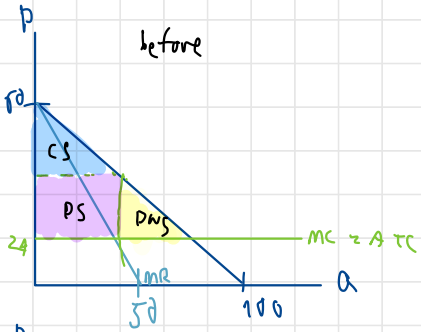
(4.b) State the profit-maximizing condition for HL and determine the optimal units of houses. Also, indicate the profit in the diagram, and explain how this profit can be derived.

$$\pi = TR - TC$$
$$= (P \cdot Q) - (ATC \cdot Q)$$
$$= 1770 - 726$$
$$= 1044$$

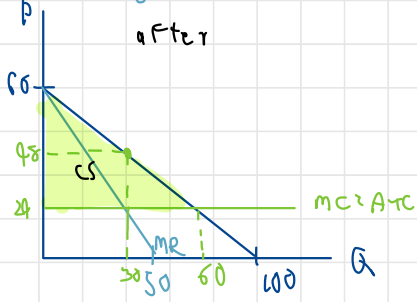


(4.c) The government tries to encourage more people to have access to luxury houses, so they launch a policy forcing HL to sell their houses at the ideal price. Draw another diagram to indicate the ideal price and determine the corresponding quantity at this price. Illustrate the social welfare before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

if gov force $P = 24$



$$24 = 60 - 0.6Q$$
$$0.6Q = 36$$
$$Q = 60$$



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)
Mook	Boba tea (B)	**1**, 2	**3**, 5	**2**, 1
	Ice-cream (C)	**0**, 4	**2**, 1	**3**, 0
	Donut (D)	**-1**, 1	**4**, 3	**0**, 2

* ปิดแนวนอนของตัวมอง 1 เลือก ... 2 จะเลือก ...
* ปิดตัวตั้งของตัวหน้า 2 เลือก ... 1 จะเลือก

from Nash equilibrium is point (4,3) mook will choose boba tea if mix choose ice cream.
mook will choose ice cream, if mix choose Donut.
mook will choose Donut if mix choose ice cream. So,
Nash equilibrium is (Donut, ice cream) #