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. Perfect substitution

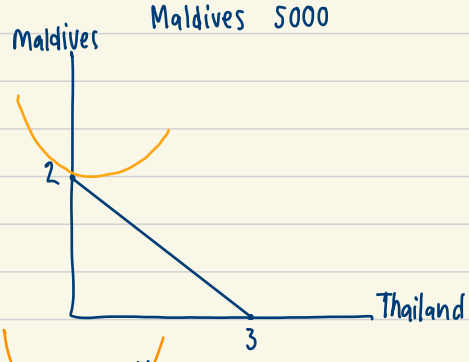
(1.a) If Neo has 10,000 baht of budget, how many times of each destination he will choose to travel and why? Draw his indifferent curve and budget line to analyze his decision and indicate details on the graph.

(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.

$MU_M = 2\,MU_T$ M = Maldives, T = Thailand

1.a Neo's budget = 10000 $\frac{MU_M}{P_M} = \frac{MU_T}{P_T}$

Thailand 3000
Maldives 5000



Neo will choose to travel to Maldives 2 times from his budget. As the utility that he will receive from travelling to Maldives 2 times.

1. b

Neo must choose to travel to Maldives 4 times as all the money would be spended.

slope = $\frac{4-2}{0-0} = 0$

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.

2.a

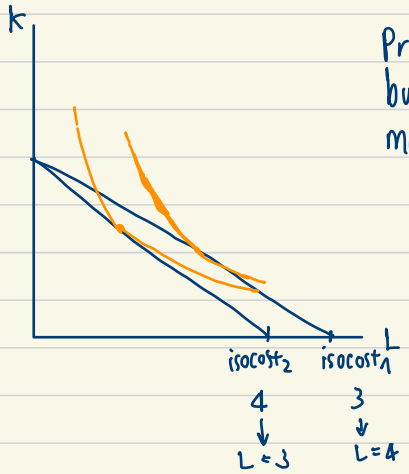
$$\frac{MP_L}{MP_K} = \frac{w}{r}$$

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

$$24 = 6r$$

$$r = 4$$

2.b



Price of the labour increase so people will buy less labour and it is substitution mean that people will buy more capital.

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.

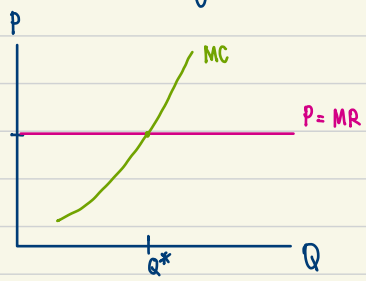
(3.c) From (3.b), should this firm stay in the market in the short run? Justify your answer.

(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?

3.a

- Market price 150 baht

Profit maximizing when MC = MR



This case the equilibrium price is 150 baht
P = MR in perfect competition, therefore
Marginal cost is 150 baht.

3.b

Quantity : 20
ATC = 180
AFC = 60
AVC ?
Total revenue ?
Total cost ?
Total profit ?

ATC = AVC + AFC
AVC = 180 - 60
= 120
Average variable cost is 120 baht.
Total revenue = 150 x 20
= 3000
Total cost = 180 x 20
= 3600
Total profit = - 600

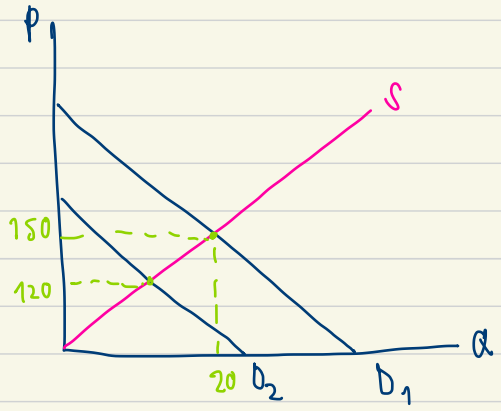
3.c

Yes, they should stay in the market in the short run.
As they will still have 30 baht left after paying the fixed cost.

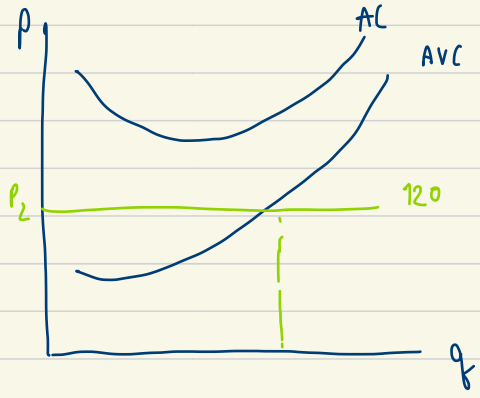
If the firm continue their production would create a lost of 600.
In other hand, if the firm shut down they will have to pay fixed cost 1200 (60x20)
Therefore the firm should stay in the market in short run.

(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)



ii)



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.

4.a)

$P = 60 - 0.6Q$

$0 = 60 - 0.6Q$

$\frac{-60}{-0.6} = Q$

$Q = 100$

Total revenue = Price × Quantity

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

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

$MR = 60 - 1.2Q$

$0 = 60 - 1.2Q$

$Q = 50$

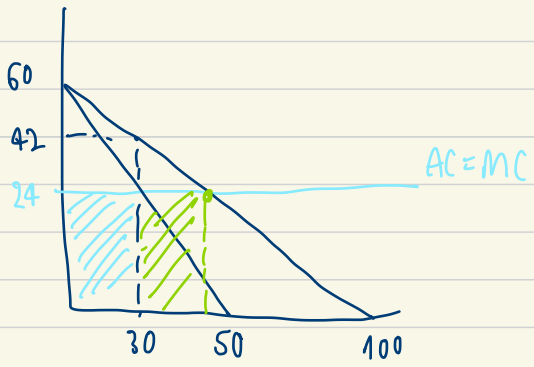
4.b)

$\pi = TR - TC$

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

$= (48 - 24)(30) = 720$

4.c)



P=MC ideal

AC=P fair

AC=MC ideal = fair

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

Nash equilibrium [4, 3]

[D, C]