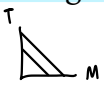
EE211 Assignment #3 (Section 2 Semester 2/2020)

Instructions:

- Assigned date is Thursday the 13th, May 2021. **Due date is Friday the 21th, May 2021 before 11.59 PM.**
- Submission is only received through BE Moodle platform as PDF file.
- Name your file as StudentID_nickname, such as 1234567489_Bo.
- There is no need to rewrite the question into your answer sheets. Indicating clearly question and item number is sufficient.
- Write your nickname and student ID on top-right corner of the first page.
- For those who do not have a digital device to write on, you can write your answers in sheets of paper, take pictures, convert them into a single PDF then submit in on Moodle.

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.



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.

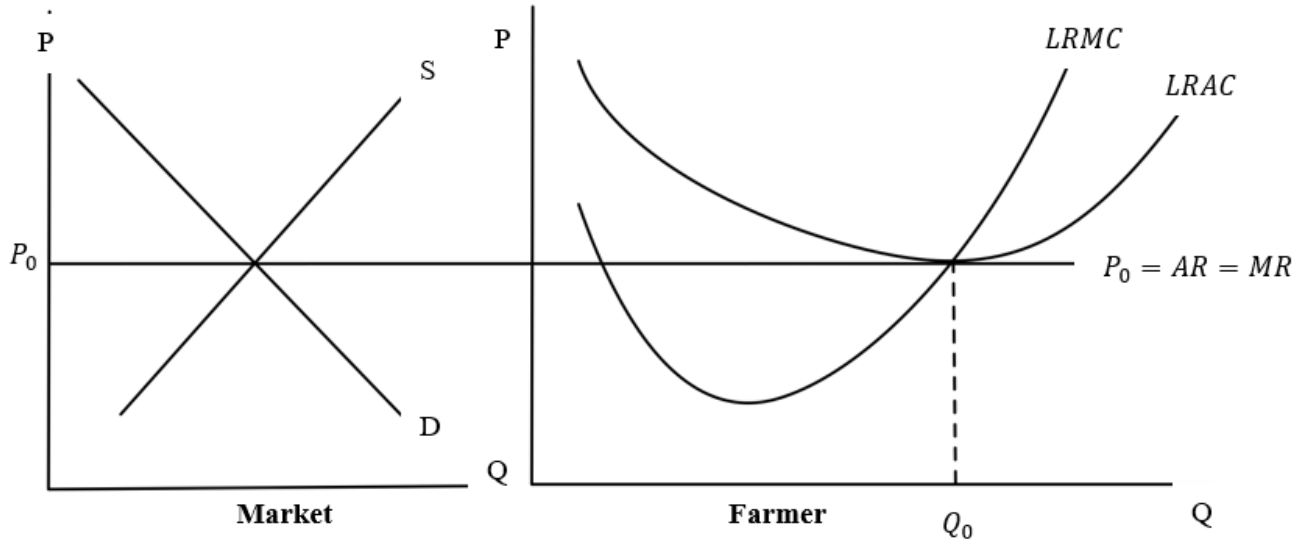
b) If his budget increases to 20,000 baht, draw his income-consumption curve. Also plot his income demand of traveling in Thailand, find its slope and explain.

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.

a) (5 points) Calculate the marginal rate of technical substitution (MRTS) and 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?

b) (5 points) 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.

3. A Thai rice farmer is in a long run equilibrium in a perfect competition and produces at the quantity Q_0 as shown in the graph below.



a) The government grants a lump sum subsidy to every farmer. How will this change the LRAC? Explain why LRMC does not change.

b) Will the lump sum subsidy change the quantity the farmer wants to produce to maximize his profit? Show in the graph that the farmer now earns an Excess Profit. Explain.

c) Demonstrate how this Excess Profit will affect the market price in the Long Run that allows new entry to the market.

4. An inverse demand function in a monopoly market is given by

$$P = 100 - 5Q$$

Supposed that the monopolist is very efficient, which gives a constant marginal cost of $20, answer the following questions.

a) How many units of this product will be produced that maximizes monopolist's profit in the short-run? Also, how much does this product cost? Show your argument clearly.

b) How much is the total variable cost when the monopolist's profit is maximized?

c) If this monopolist has a fixed cost of $160, how much is the monopolist's profit?

5. Assumed both a product market and a labor market are perfectly competitive, a table of marginal product is given below.

Unit of labor	Marginal product of labor
2	12
3	8
4	6
5	4
6	2

This product can be sold in the market for $12 each while labor wage is $48, answer the following questions clearly.

a) Figure out how many units of labor this firm will choose as input for its production to maximize profit. Illustrate a graph to support your answer and explain.
b) Supposed that there is a sudden economic recession driving consumers' purchasing power downward, what would happen to the units of labor hired by this firm? Support your answer with illustrations that also show a connection between product market and labor market.

6. Consider these statements and indicate which one of the choices fits with each statement and roughly explain why.

Choices:

1. Not a market failure
2. Market power
3. Externalities
4. Public goods
5. Moral hazard
6. Adverse selection

a) People feel that price level is hiking. (1)
b) Morpheus always hears a loud fight coming from a room next to his. (5)
c) Trinity does not receive her full-benefit until her first 3-month of her work position. (3)
d) In Chiang Mai, there is no earthquake alarming system. (4)
e) Starbucks coffee is more expensive than Amazon coffee. (2)

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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.

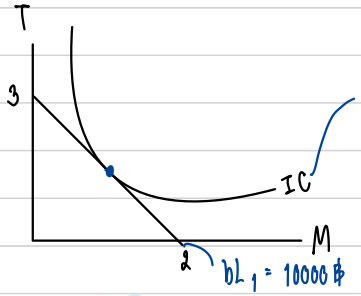
T
M

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.

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

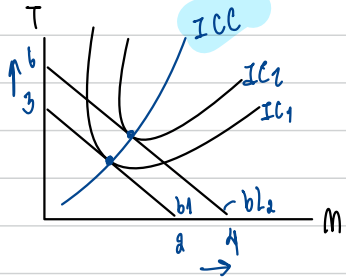
(a) according from information

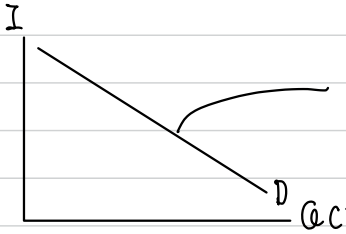
if he has 10000 → he can travel to thailand 3 times → 10000 ≥ 3000(t)
(times he can travel in thailand)
↳ Maldive 2 times → 10000 ≥ 5000(m)



the indifferent curve that show how Maldive trip and thailand trip can be substituted each other.

(b)





the demand for travelling in thailand because he get more utility from traveling to maldive, so when he has more income he will decrease his trip to thailand.

∴ the slope of the demand graph is negative due to $\frac{\Delta \text{ the increase income}(y)}{\Delta \text{ more trip}\ (x)} \rightarrow$ (−)

↳ he travel to thailand less when he has more income

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cost = wL + rK

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.

$\frac{w}{r} = \frac{MP_L}{MP_K} = \frac{\Delta K}{\Delta L}$

$\frac{\Delta K}{\Delta L} = \frac{MP_L}{MP_K}$

a) (5 points) Calculate the marginal rate of technical substitution (MRTS) and 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?

CMP

w = 3

K

r = ?

b) (5 points) 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.

C

w = 4

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

a) $MRTS = \frac{\Delta K}{\Delta L} = \frac{MP_L}{MP_K} = \frac{6}{8}$

the cost minimization is when firm try to produce product as much as they can with limit cost

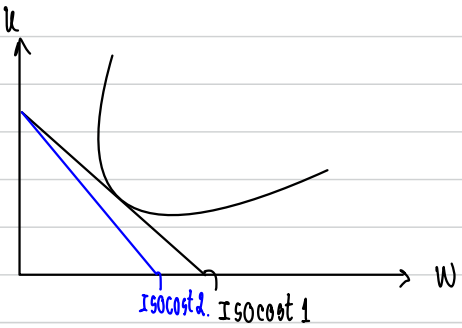
↳ $\frac{MP_L}{MP_K} = \frac{w}{r}$

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

$6r = 24$

$r = 4$

b)



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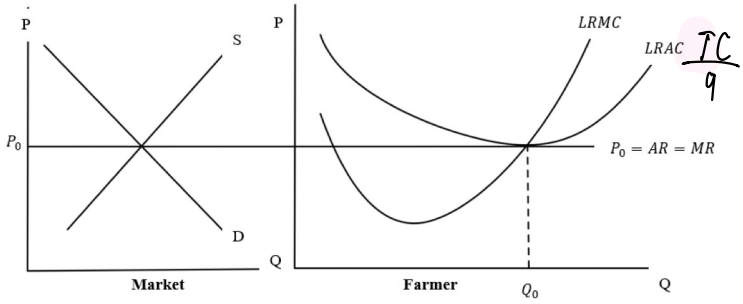
3. A Thai rice farmer is in a long run equilibrium in a perfect competition and produces at the quantity Q_0 as shown in the graph below.



a) The government grants a lump sum subsidy to every farmer. How will this change the LRAC? Explain why LRMC does not change.

b) Will the lump sum subsidy change the quantity the farmer wants to produce to maximize his profit? Show in the graph that the farmer now earns an Excess Profit. Explain.

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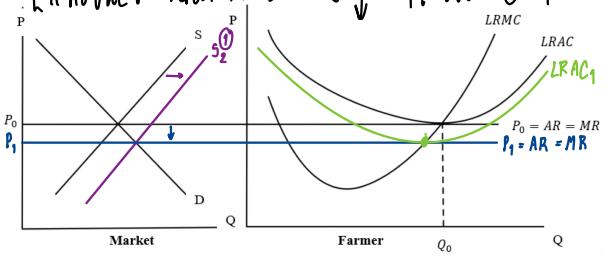
a) The government grants a lump sum subsidy to every farmer. How will this change the LRAC? Explain why LRMC does not change.

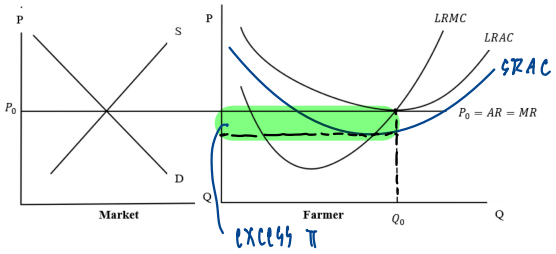
; the change in LRAC is that the AC decrease because they get subsidy from gov → TC↓ / q → the same
so the AC will go down

: the reason why LRMC is not change because the cost structure was not change.

[Another idea is that] ↓ if subsidy per q.



b)

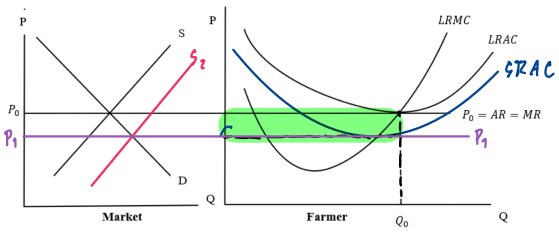


After the AC decrease because the lump sum tax [SRAC]
- there will be excess Profit.
- Farmers still produce to the same quantity at Q_0 which is where MR = MC

Isocost Isoquant this can derive from

① when farmers have more budget to produce they will produce more, so the supply market curve shift right
② that cause Price to go down at P_1
③ At the lower Price, but the Long run average cost is above the P_1, Firm need to Adjust the cost down to the equilibrium price in the long run where
↳ P = LMC = LMR

c) from (b) there is excess profit in short run due to lump sum tax so, when there is excess profit in Perfect competition, there will be more producers enter to that market.
Therefore, the supply curve shift to right because the increase in producer that cause Price goes down to P_1 and consumer and Producer need to take it and it enter the Long run equilibrium again.



4. An inverse demand function in a monopoly market is given by

$$P = 100 - 5Q$$

MC = 20 $

Supposed that the monopolist is very efficient, which gives a constant marginal cost of $20, answer the following questions.

a) How many units of this product will be produced that maximizes monopolist's profit in the short-run? Also, how much does this product cost? Show your argument clearly.

b) How much is the total variable cost when the monopolist's profit is maximized? TVC?

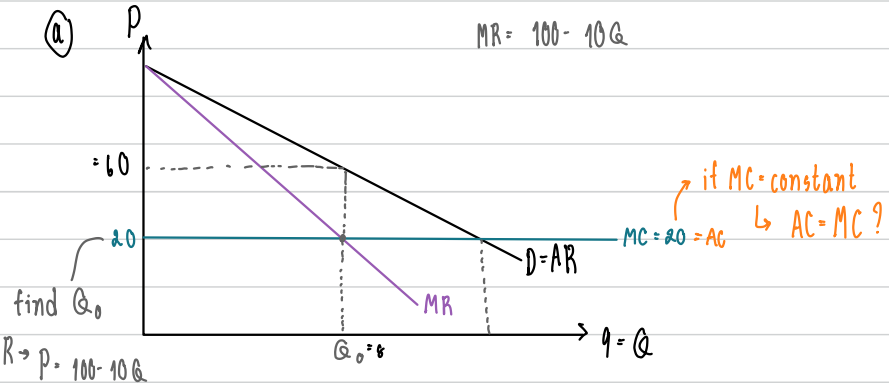
c) If this monopolist has a fixed cost of $160, how much is the monopolist's profit? π?

TFC = 160

P = 100 - 5Q

MR = 100 - 10Q

(a)



if MC = constant → AC = MC ?

find Q_0

MR → P = 100 - 10Q

20 = 100 - 10Q

-80 = -10Q

Q = 8

find P at Q=8

P = 100 - 5Q

P = 100 - 40 = 60

Ans : there will be 8 units are produced to maximize profit

: the products cost (AC · Q) = 20 · 8 = 160 $

(b) Aviarable cost < 160 $

(c) if Fixed cost = 160

Profit = TR - TC

= (P · Q) - (AC · Q)

= (60 · 8) - (20 · 8)

= 480 - 160

= 320 $

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5. Assumed both a product market and a labor market are perfectly competitive, a table of marginal product is given below.

L

Unit of labor	Marginal product of labor
2	12
3	8
4	6
5	4 ← $MP_2 = 4$
6	2

P

This product can be sold in the market for $12 each while labor wage is $48, answer the following questions clearly.

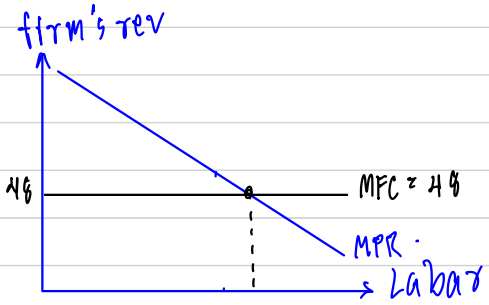
a) Figure out how many units of labor this firm will choose as input for its production to maximize profit. Illustrate a graph to support your answer and explain.

b) Supposed that there is a sudden economic recession driving consumers' purchasing power downward, what would happen to the units of labor hired by this firm? Support your answer with illustrations that also show a connection between product market and labor market.

MR=MC

MFC = wage

(a)



MRP = MFC

$MP \cdot MR = 48$

$MP \cdot 12 = 48$

$\boxed{MP = 4}$

↳ marginal product when additional Labor

∴ According from table

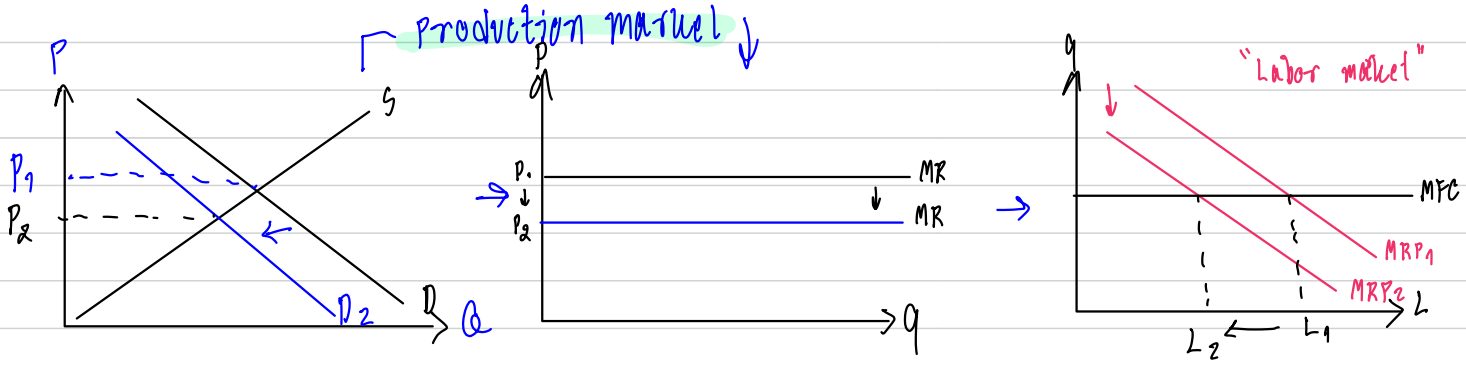
there are 5 units of labor that firm choose.

: in Perfect competitive P = MR

- to find unit of Labor. we need to find MP_L.
  MP_L can be found in MRP = MP · MR and at maximized Profit mean MFC = MRP, and wage = MFC
  therefore MFC = 48 MR = P = 12 → MFC = MRP
  $48 = 12 \cdot MPL$
  $MPL = 4$
  ∴ look at the table

(b)

production market



when there is decrease in purchasing power, there will be less of demand (D shift left) and P_1 drop to P_2. cause the marginal revenue decrease in percompetitive. market in Labor market, MRP = MP · MR. so when P↓ MR↓ and MRP also drop. While the MFC is constance

MR = P

. Therefore, the firm's equilibrium change to new equilibrium at lower unit of Labor.