

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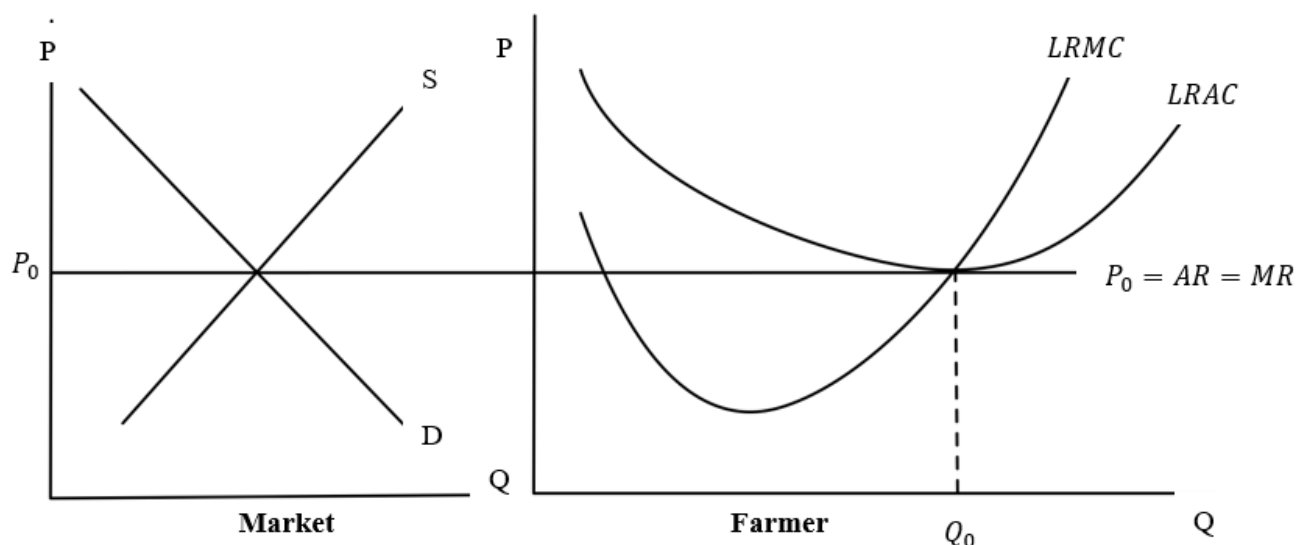
1. Neo loves traveling. Supposed he has two choices of destination, Thailand and Maldives which costs him 3,000 baht and 5,000 baht respectively. His utility received from traveling to Maldives is twice compared to traveling to Thailand. Answer the following questions.

- 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.



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

- 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.
- How much is the total variable cost when the monopolist's profit is maximized?
- 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.

- 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.
- 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:

- Not a market failure
- Market power
- Externalities
- Public goods
- Moral hazard
- Adverse selection

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

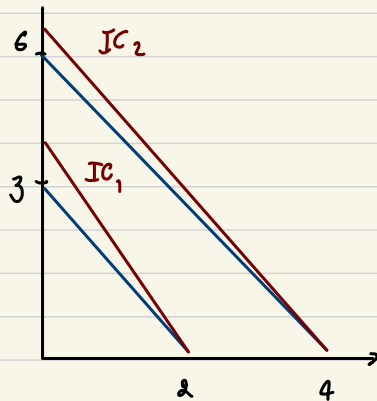
1. a.)



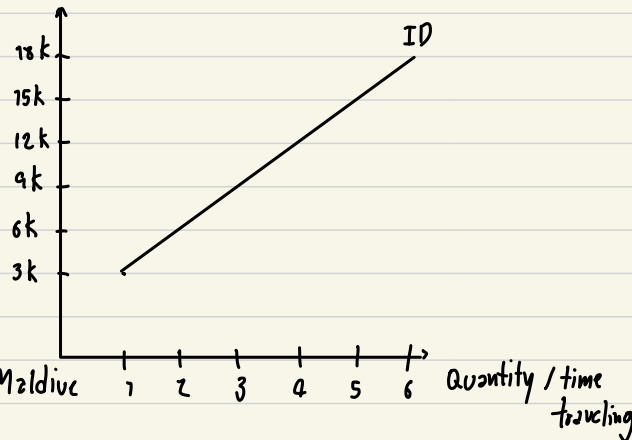
Neo will travel to Maldives 2 times (2, 0) since it is point that hold the most utility for the given budget.

B.)

Thailand



Income / cost



Neo income demand curve for traveling to Thailand is going to be zero. At budget of 20,000 he would maximize his utility by traveling to Maldives 4 times. This means that he has no demand of traveling to Thailand. Therefore, slope = 0

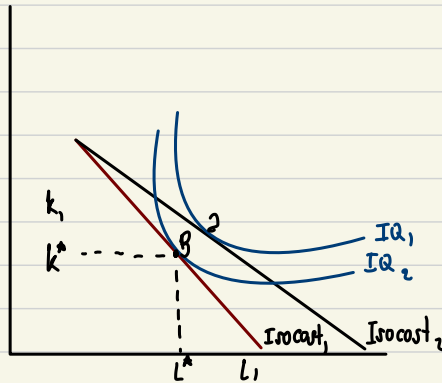
$$2 \quad a) \quad MRTS_{LK} = \frac{MP_L}{MP_K} = \frac{6}{3}$$

$$MRMS_{LK} = \frac{w}{r} = \frac{3}{8}$$

$$\frac{6}{3} = \frac{3}{r} \quad r = 4$$

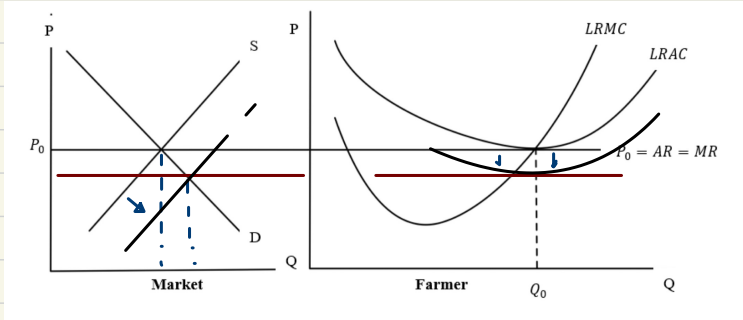
$\therefore$ The interest rate of equilibrium is 4

b.)



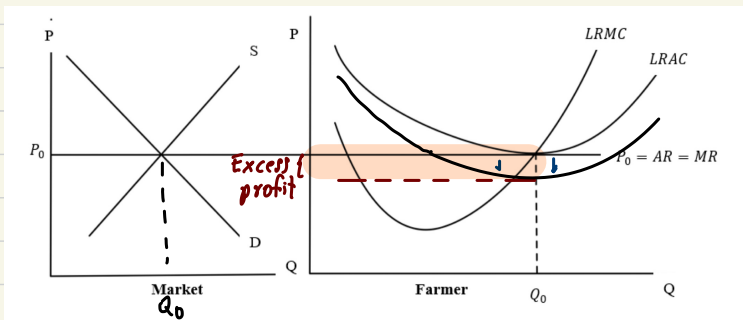
If wage become more expensive it's now cost more for firm to hire labor. Isocost changes from $Isocost_1$ to $Isocost_2$. With the new isocost, firm can't produce at the previous combination at point 1. The new combination of inputs that minimize the cost is now at point 2. If firm want the output to remain at Q_0 They would need to raise the budget accordingly to increase in wage

3.) 2.)



When government provide lump-sum tax, fixed cost will decrease which will result in lower total cost. Therefore, Average cost will go down as well. And Lump-sum subsidy is a fixed amount of money pay to farmer. This will decrease farmer's fixed cost not the variable cost. Therefore, it won't affect marginal cost.

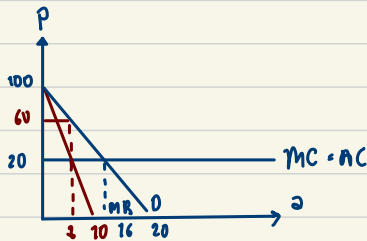
b.)



In SR production, when farmers receive lump-sum tax. The total cost of production for farmers will decrease. This result to higher total revenue compared to total cost. This result to an excess profit as shown in the graph, the different between AR and AC is excess profit. Farmers will be producing at the same quantity Q_0 where MR is equal to MC.

a) The excess profit will encourage the new competitions to enter the market. The supply will increase making price drop to the point where is normal profit

4.)



$$D = P(Q) = 100 - 5Q$$

$$TR = P \times Q = 100Q - 5Q^2$$

$$MR = \frac{dTR}{dQ} = 100 - 10Q$$

a) maximum profit when $MR = MC$

$$100 - 10Q = 20$$

$$Q = 8 \text{ units}$$

$$\text{and this producer price} = 100 - 5(8) = 60 \text{ \$}$$

$$b) TVC = MC \times Q = 20 \times 8 = 160 \text{ \$}$$

$$c) \text{ profit ; } \pi = TR - TC$$

$$= TR - (TFC + TVC)$$

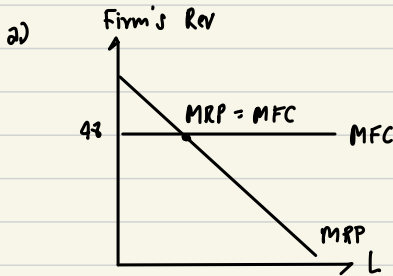
$$= 480 - (160 + 160)$$

$$= 160 \text{ \$}$$

5.

n below.

Unit of labor		Marginal product of labor	
2	96	12	144
3	144	8	96
4	192	6	72
5	240	4	48
6	288	2	24



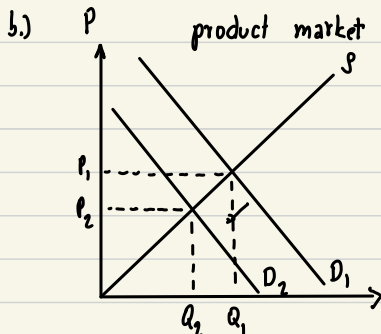
$$MRP = MFC$$

$$MP \times MR = 48$$

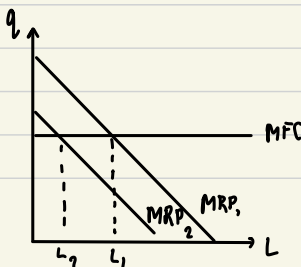
$$MPL \times 12 = 48$$

$$MPL = 4$$

$\therefore$ 3 units of labor



Purchasing power decrease make demand drop lead to reduction of quantity and price



When price drop, since $MR = P$, MR will drop too. Moreover, $MRP = MR \times MP$ will shift from MRP_1 to MRP_2 and more the labor units decline too.

- 6.) 1.) Not Market failure $\rightarrow$ A.) Inflation and speculation is normal thing in the market.
- 2.) Market power $\rightarrow$ E.) Starbucks has market power ($P > MC$) than Amazon. So Starbucks can set price higher in same product than Amazon.
- 3.) Externalities $\rightarrow$ B.) Negative externalities coming from next room.
- 4.) Public good $\rightarrow$ D.) The earthquake alarming system are public goods since it's available and benefit to everyone.
- 5.) Moral hazard $\rightarrow$ C.) Trinity might has an incentive to do risky thing since she doesn't bear full cost of that risk.