

Assignment #3

- (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 indifference curve and budget line to analyze his decision and indicate details on the graph.

$$M = 10,000 \quad \text{let Thailand} = X \quad P_x = 3,000 \quad \text{Maldives} = Y \quad P_y = 5,000$$

$$\max TH = \frac{BL}{P_x} = \frac{10,000}{3,000} = 3.33 \text{ times}$$

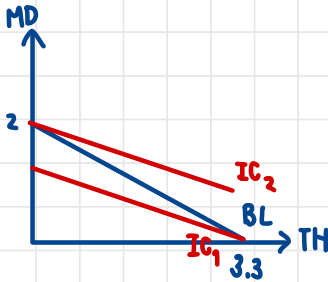
$$\max MD = \frac{BL}{P_y} = \frac{10,000}{5,000} = 2 \text{ times}$$

• Budget lines
 $10,000 \geq 3,000X + 5,000Y$
 slope : $\frac{3,000}{5,000} = \frac{3}{5} = 0.6$

Decision

$\frac{M_{Ux}}{P_x}$ compare utility per price $\frac{M_{Uy}}{P_y}$ $\frac{M_{Ux}}{M_{Uy}} = \frac{1}{2} = 0.5$

$\frac{1}{3,000} < \frac{1}{2,500}$ Neo should go to maldives because utility per unit of price of Maldives greater than Thailand



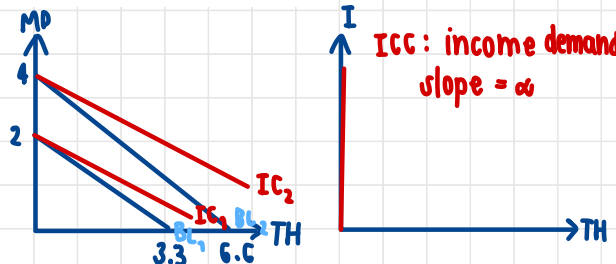
- b) If his budget increases to 20,000 baht, draw his income-consumption curve. Also plot his income demand of traveling in Thailand, find its slope and explain.

$$\max TH = \frac{20,000}{3,000} = 6.666... \text{ times}$$

$$\max MD = \frac{20,000}{5,000} = 4 \text{ times}$$

budget line

$$20,000 \geq 3,000X + 5,000Y$$



when budget increase the new optimal point is travel Maldives 4 times
 ICC is the line that slope = ∞ because it is a vertical line
 but if Maldives is on X-axis the slope will be 0 which is a horizontal line

- (2) 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?

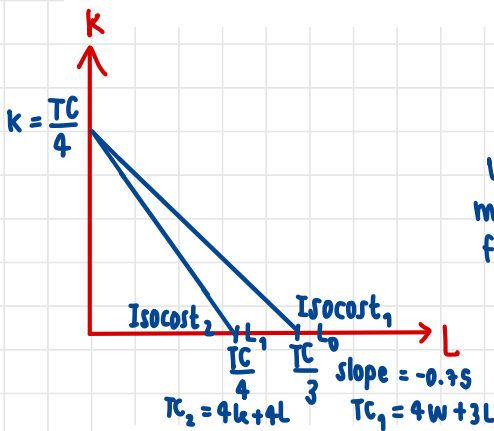
$$|MRTS_{LK}| = \left| \frac{\Delta K}{\Delta L} \right| = \left| \frac{MP_L}{MP_K} \right| = \left| \frac{6}{9} \right| = 0.75$$

at cost-minimization = $\left| \frac{MP_L}{w} \right| = \left| \frac{MP_K}{r} \right|$ $\frac{6}{3} = \frac{6}{r}$

$$6r = 24$$

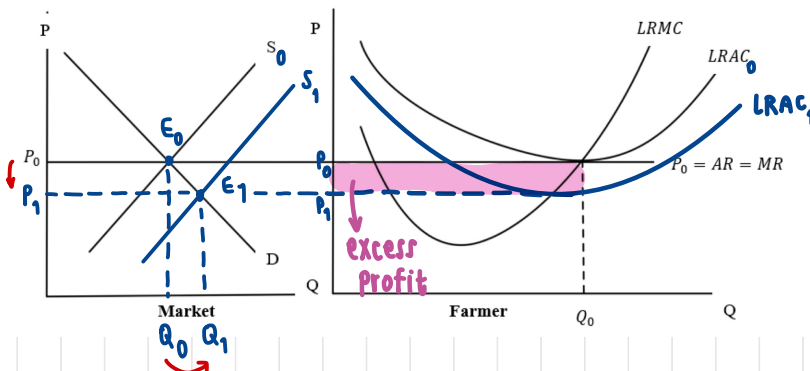
$$r = 4 \#$$

- 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)

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.

When the government grants a lump sum subsidy, which means the farmer wants to enter this market and competition in this market due to excess profit. In the market side, the supply curve shifts from S_0 to S_1 , the price decreases from P_0 to P_1 , and Q_0 to Q_1 . The equilibrium moves from E_0 to E_1 . Hence, $LRAC_0$ moves to $LRAC_1$. In LR, firms in perfect competition tend to receive normal profit and achieve the lowest point of the average cost curve. A lump sum subsidy is one-time fixed money, so it will not affect the variable factors \rightarrow 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.

Farmer will not change the quantity because MR and LRMC are not changed. To maximize profit is $MR = MC$. The excess profit is the pink area.

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

When new competitors enter to compete in this market, supply increases, market price decreases, profit decreases. It will cause zero economic profit. There won't be new competitors entering in this firm anymore.

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.

$$MC = AC$$

$$MC = 20$$

- 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.

$$P = 100 - 5Q$$
$$TR = P(Q) \cdot Q = 100Q - 5Q^2$$
$$MR = \frac{dTR}{dQ} = 100 - 10Q$$

$$\text{product cost} = 100 - 5(8)$$
$$= 100 - 40$$
$$= 60 \text{ \$}$$

Maximize profit $MR = MC$

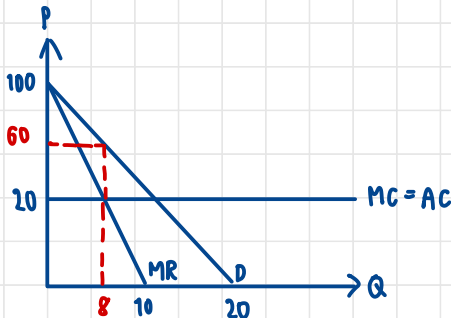
$$100 - 10Q = 20$$
$$80 = 10Q$$
$$8 = Q^* \text{ \$}$$

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

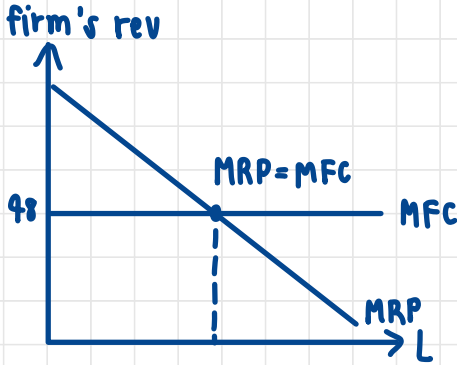
$$TVC = MC \cdot Q$$
$$= 20 \cdot 8 = 160 \text{ \$}$$

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

$$\text{Profit} = TR - TC$$
$$= TR - (TFC + TVC)$$
$$= 480 - (160 + 160)$$
$$= 160 \text{ \$}$$



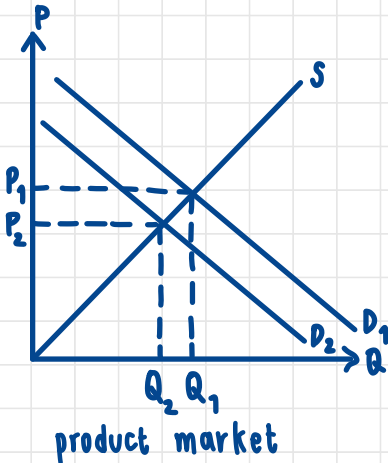
- (5) a) Figure out how many units of labor this firm will choose as input for its production to maximize profit. Illustrate a graph to support your answer and explain.



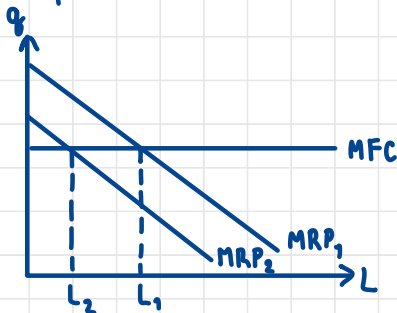
$$\begin{aligned} \text{a) } MRP &= MFC \\ MP \cdot MR &= 48 \\ MPL \cdot 12 &= 48 \\ MPL &= 4 \end{aligned}$$

\therefore 5 units of labor

- 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.



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



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

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.

Ans. not a market failure It is a normal mechanism of market

b) Morpheus always hears a loud fight coming from a room next to his.

Ans. Externalities , Negative externalities from third party

c) Trinity does not receive her full-benefit until her first 3-month of her work position.

Ans. Moral hazard , The company bear the risk instead of Trinity.

d) In Chiang Mai, there is no earthquake alarming system.

Ans. Public goods , The earthquake alarming is benefit to everyone

e) Starbucks coffee is more expensive than Amazon coffee.

Ans. Market power , Starbucks can set price higher than other for the same product.