

**EE211 Assignment #2 (Section 2 Semester 2/2020)****Instructions:**

- Assigned date is Thursday the 4<sup>th</sup>, March 2021. **Due date is Thursday the 11<sup>th</sup>, March 2021 before 11.00 PM.**
- Submission is only received through BE Moodle platform as PDF file.
- Name your file as StudentID\_nickname, such as 1234567489\_Bo. **Please also comply to this instruction. It would be a lot easier to handle with your files.**
- 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. Belle is choosing ham (h) and cheese (c), which is assumed to be substitutable goods for her. Her total utility from each product is given in the table here.

| Quantity | Total utility from ham ( $TU_h$ ) | $MU_h$ | Total utility from cheese ( $TU_c$ ) | $MU_c$ |
|----------|-----------------------------------|--------|--------------------------------------|--------|
| 1        | 15                                | 15     | 12                                   | 12     |
| 2        | 26                                | 11     | 21                                   | 9      |
| 3        | 35                                | 9      | 27                                   | 6      |
| 4        | 41                                | 6      | 32                                   | 5      |
| 5        | 45                                | 4      | 35                                   | 3      |
| 6        | 48                                | 3      | 37                                   | 2      |
| 7        | 49                                | 1      | 38                                   | 1      |

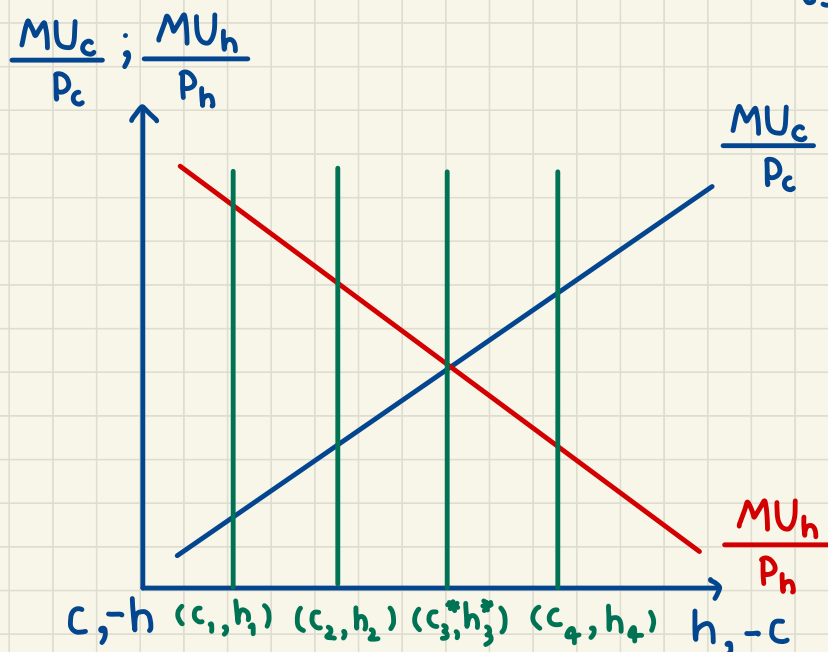
Answer the following questions.

(a) If Belle has \$7 budget and both ham and cheese cost \$1 each, how many units of ham and cheese she should purchase to maximize her utility? Explain your method clearly.

(b) Provide a clear explanation why her utility will not be maximized if the condition that you apply in part a. is not yet satisfied.

| ① a) | H, c | $\frac{MU_h}{P_h}$ | $\frac{MU_c}{P_c}$ | choice |
|------|------|--------------------|--------------------|--------|
|      | 1    | 15                 | 12                 | $H_1$  |
|      | 2    | 11                 | 9                  | $C_1$  |
|      | 3    | 9                  | 6                  | $H_2$  |
|      | 4    | 6                  | 5                  | $H_3$  |
|      | 5    | 4                  | 3                  | $C_2$  |
|      | 6    | 3                  | 2                  | $H_4$  |
|      | 7    | 1                  | 1                  | $C_3$  |

Belle should buy 4 units of ham and 3 units of cheese to maximize her utility



$$c_1 > c_2 > c_3 \quad h_1 < h_2 < h_3$$

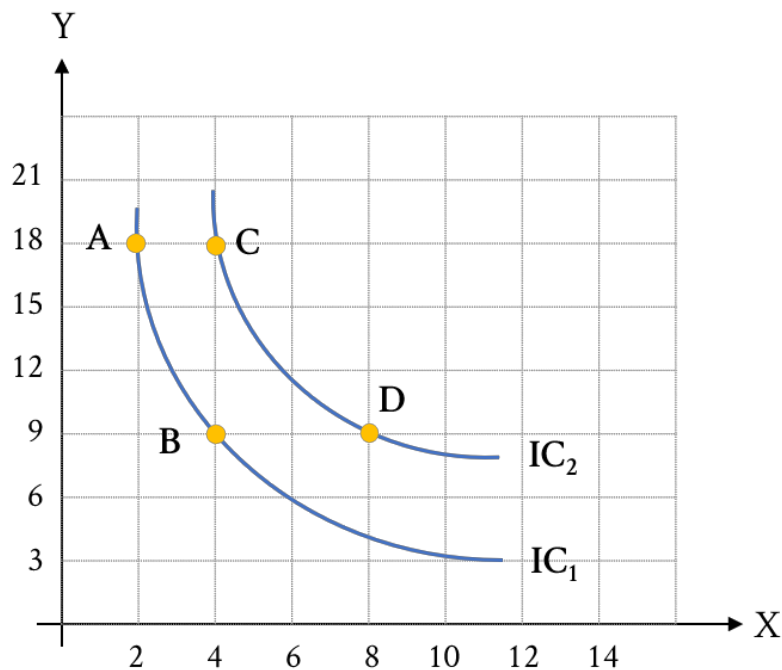
$$(c_1, h_1) \quad \frac{MU_{c_1}}{P_{c_1}} < \frac{MU_{h_1}}{P_{h_1}}$$

As you can see from  $\frac{MU_{c_1}}{P_{c_1}} < \frac{MU_{h_1}}{P_{h_1}}$ , the marginal utility

of ham is more than cheese at the same price.

b) Marginal utility of product X and Y are zero because there's no constant budget. When  $MU_x = MU_y = 0$ , she can purchase ham and cheese with utility maximization.

2. A consumer finds that for him/her avocado (X) and nuts (Y) are substitutes. Assumed that this consumer yields 8 and 12 utils on IC<sub>1</sub> and IC<sub>2</sub> respectively, show your work and answer the following questions.



(a) Measured from point A to B, assumed  $P_Y$  is 10 baht per unit, how much  $P_X$  must be to make you conclude that the consumer's equilibrium is on point B?

(b) Measured from point A to B, assumed  $P_X$  is 180 baht per unit, how much budget does this consumer has to achieve the equilibrium on point B?

(c) Measured from point C to point D, how much is the average marginal utility per unit of avocado?

(d) Show that this consumer's utility received from consuming avocado is in accordance with the law of diminishing marginal utility, using any essential information from any point. (But highly recommend that you consider all the points)

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② a) Point A = (2, 18), Point B = (4, 9)

$$\begin{aligned} |MRS_{xy(B)}| &= \left| \frac{\Delta Y}{\Delta X} \right| \\ &= \left| \frac{9-18}{4-2} \right| \\ &= 4.5 \end{aligned}$$

$$MRS = MRMS$$

$$\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

$$4.5 = \frac{P_x}{10}$$

$$\therefore P_x = 45 \#$$

$$b) MRS = MRMS$$

$$\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

$$4.5 = \frac{180}{P_y}$$

$$P_y = 40$$

$$I \geq P_x \cdot x + P_y \cdot y$$

$$I \geq 180 \cdot 4 + 40 \cdot 9$$

$$\therefore I \geq 1080 \#$$

c) From point C → D ;  $MU_x = 4 \cdot 12 = 48 \therefore U(1) = 12$

$$\text{Average } MU_x = \frac{MU_x}{x} = \frac{48}{4} = 12 \#$$

d) From point C and D, the willingness to pay of avocado is more than nut, it can assumed that price of avocado is increased. When  $IC_1$  and  $IC_2$  have the same slope, the willingness to pay for avocado is decreased at any point if the price is high.