HOME WORK

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

Instructions:

- Assigned date is Thursday the 4th, March 2021. **Due date is Thursday the 11th, 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)	Total utility from cheese (TU_c)
1	15	12
2	26	21
3	35	27
4	41	32
5	45	35
6	48	37
7	49	38

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 Table A

Quantity	TU_h	MU_h	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

Table B

budget	Q	MU_h	MU_c	MU_h/P_h	MU_c/P_c	choice	remaining budget
	1	15	12	15	12	h_1, c_1	7-1 = 6
	2	11	9	11	9	h_2, c_1	6-1 = 5
	3	9	6	9	6	h_2, c_2	5-1 = 4
7	4	6	5	6	5	h_3, c_2	4-1 = 3
	5	4	3			h_3, c_3	3-2 = 2
	6	3	2			h_4, c_3	2-1 = 1
	7	1	1			h_4, c_4	1-1 = 0

= choose this choice bc it gives more utility

= both choices give the same amount of utility

(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.

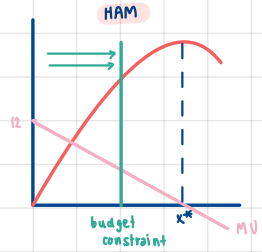
First of all, we have to calculate the marginal utilities first.

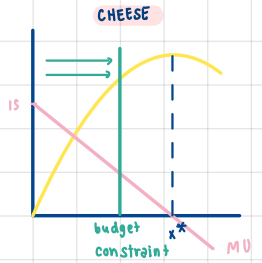
$$MU_n = TU_n - TU_{n-1}$$

Second, we compare the utilities between 2 products in each scenario with the budget constraint and choose the choice that maximize our utilities. From the table B, with the Budget of 7$, Belle should buy 4 units of ham and 3 units of cheese to maximize her utilities.

(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.

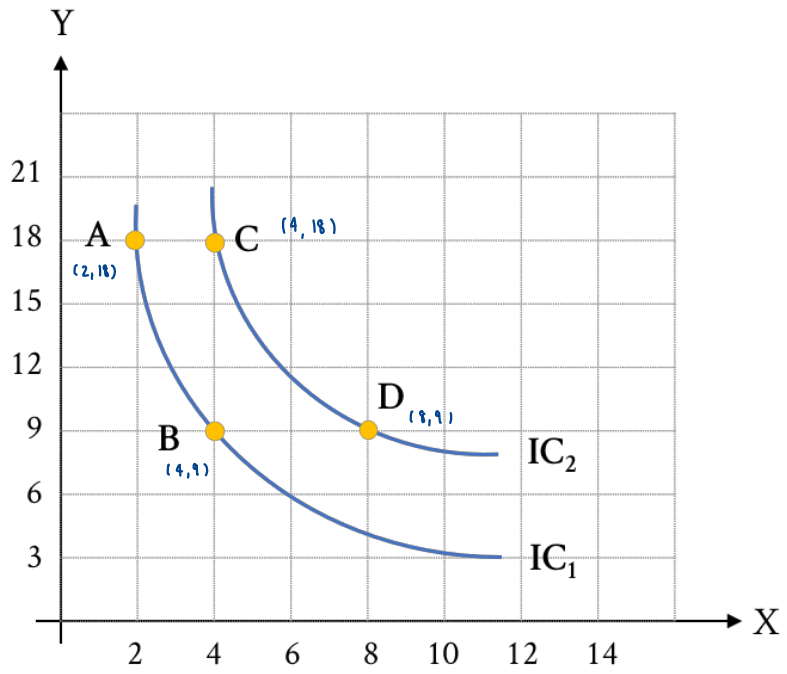
From the table B, we can plot the graph like this.





Due to the budget constraint at 7$, Belle can't maximize her utilities yet. Marginal utilities of both ham & cheese don't reach the maximum point where MU = 0 within the budget line of 7$.

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 IC1 and IC2 respectively, show your work and answer the following questions.



(a) Measured from point A to B, assumed Py is 10 baht per unit, how much Px must be to make you conclude that the consumer's equilibrium is on point B? → Consumer eq ?

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

(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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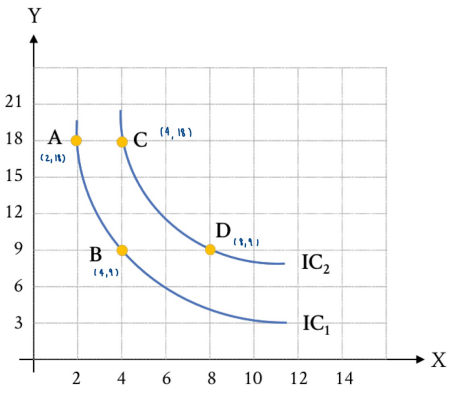
IC_1 yields 8 utils IC_2 yields 12 utils



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

$MRS_{AB} = MRMS_{AB}$

$\left|\frac{\Delta y}{\Delta x}\right| = \frac{P_x}{P_y}$

$\left|\frac{9-18}{4-2}\right| = \frac{P_x}{10}$

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

$\therefore P_x = 45$ baht per unit

$\therefore$ P_x must be 45 baht per unit in order to conclude that the consumer's equilibrium is on point B

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

$MRS_{AB} = MRMS_{AB}$

$\left|\frac{\Delta y}{\Delta x}\right| = \frac{P_x}{P_y}$

$\left|\frac{9-18}{4-2}\right| = \frac{180}{P_y}$

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

$\therefore P_y = 40$ baht / unit

Budget line : $I = P_x \cdot X + P_y \cdot Y$

$I = 180(4) + 40(9)$

$I = 720 + 360$

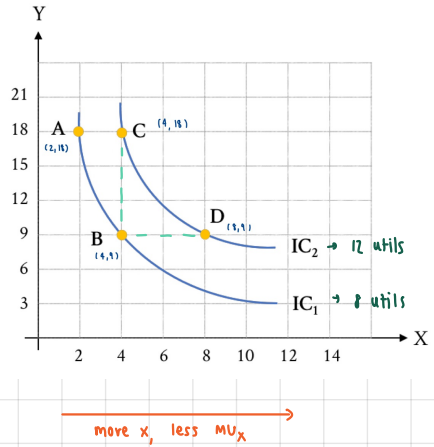
$I = 1080$ baht

$\therefore$ The budget that consumer has to have in order to achieve the equilibrium on point B is 1080 baht

Avocado = x

Nut = y

IC_1 yields 8 utils IC_2 yields 12 utils



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

From C to B, the consumer gives up 4 units of nuts and loss 4 units of utilities.

From B to D, the consumer gains 4 units of avocado and also gains 4 units of utilities from IC_1 to IC_2

∴ The average marginal utility per unit of avocado is $\frac{4}{4} = 1$

(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)

The law of dimishing marginal utility states that if the consumer keep consumes, the marginal utility will keep dimishing every unit of consuming.

At point D, consumer consumes 8 units of avocados and at point B, consumer consumes 4 unit of avocados. But at point B, consumer will get more MU than what he/she will get at point D. Because at point B, the consumer is willing to give up more avocados to get more nuts in order to yield the same utility.