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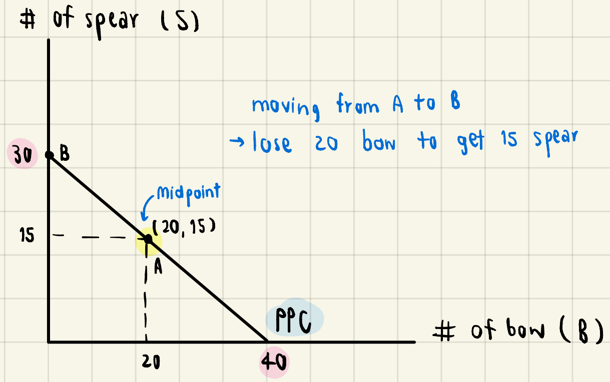
1. a) 120 units of wood
take 4 units of wood to produce a spear $\frac{120}{4} = 30$
take 3 units of wood to produce a bow $\frac{120}{3} = 40$

} $4S + 3B = 120$ → PPC equation
or let $S = 0$ → get $b = 40$
let $b = 0$ → get $S = 30$

↳ constant opportunity cost → linear PPC

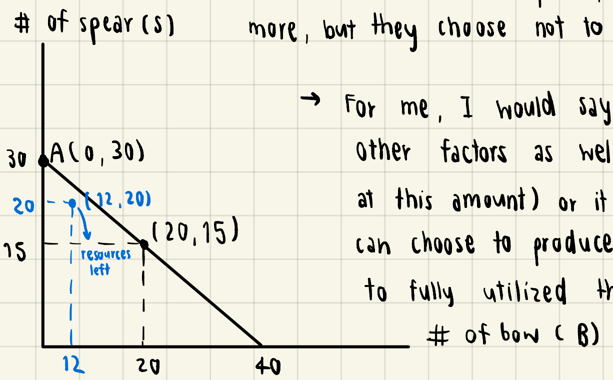
↳ PPC curve
or PPF (production possibility frontier)



1. b) opportunity cost for a spear in terms of bow => 1 spear $= \frac{20}{15}$ bows $= 1.333...$ bows #

1. c)

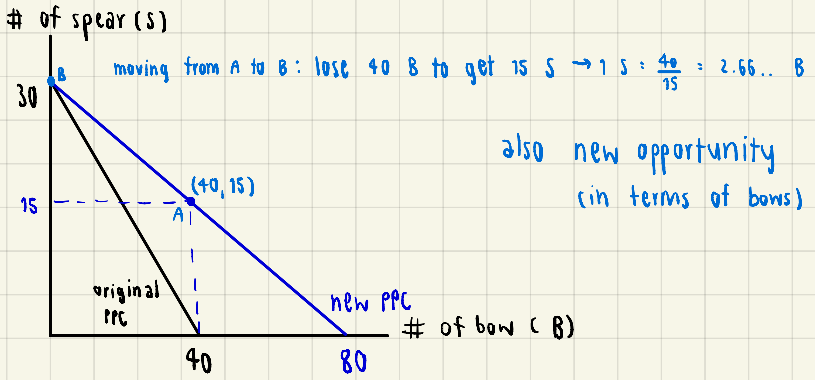
→ It's possible to produce 20 spears and 12 bows because point (12, 20) is below ppc curve, which means at this point, there still has resources left (eventhough they can produce more, but they choose not to produce more) (resources are not fully utilized)



→ For me, I would say that it's might effective because it's depend on other factors as well like an environmental effects (may be better to produce just at this amount) or it might have more alternative products that this civilization can choose to produce. On the other hand, it also can ineffective if it's better to fully utilized the resources)

1. d)

PPC equation change to $1.5B + 4S = 120$
let $b = 0$ → get $S = 30$
let $S = 0$ → get $b = 80$
} so, we get new PPC curve ↴



also new opportunity cost for a spear $= \frac{40}{15} \approx 2.67$ bows #
(in terms of bows)

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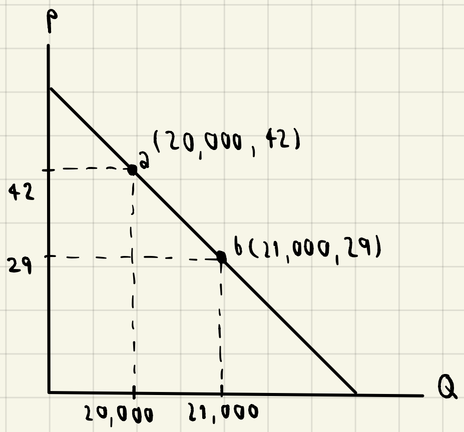
2. a)



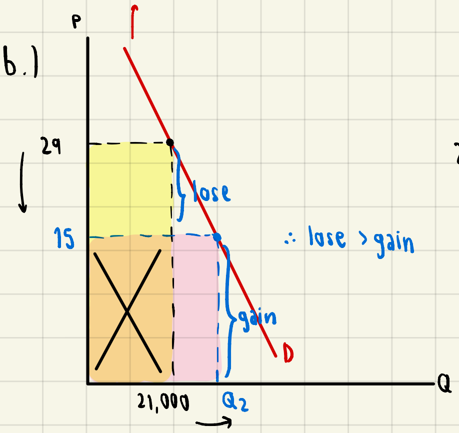
$$\varepsilon d_a = \frac{\%\Delta Qd}{\%\Delta P} = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q} = \frac{Q_2 - Q_1}{P_2 - P_1} \cdot \frac{P_1}{Q_1} = \frac{21{,}000 - 20{,}000}{29 - 42} \cdot \frac{42}{20{,}000}$$

slope

$$= \frac{1{,}000}{-13} \cdot \frac{42}{20{,}000} = -0.1615$$ # → inelastic demand ($|\varepsilon d| < 1$)

steep demand curve due to inelastic demand

2.b.)



→ Due to inelastic demand, the demand curve become steep. Moreover, when the MPT operator decides to decrease the price from 29 to 15, the quantity will decrease from 21,000 to Q_2.

According to the graph, the lose part is greater than the gain part. So, when they ↓ P, the total revenue will lose.

→ To conclude, if the MRT operator decides to reduce the fare even further from 29 to 15 baht per trip, it will NOT longer increasing total revenue of MRT purple line.

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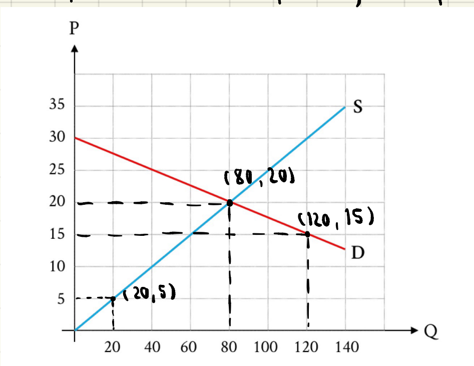
headphones market is perfectly competitive.

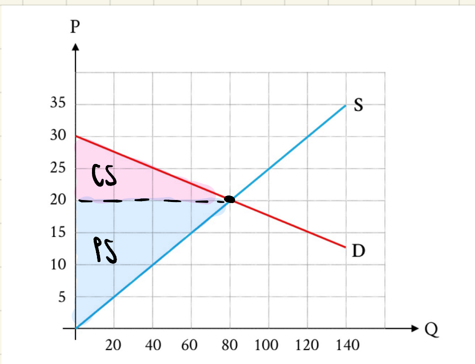
3.a)



E_d at eqbm. $= \dfrac{\%\Delta Q_d}{\%\Delta P} = \dfrac{\Delta Q}{\Delta P} \cdot \dfrac{P_1}{Q_1} = \dfrac{120-80}{15-20} \cdot \dfrac{20}{80} = -2$ #

E_S at eqbm. $= \dfrac{\%\Delta Q_s}{\%\Delta P} = \dfrac{\Delta Q}{\Delta P} \cdot \dfrac{P_1}{Q_1} = \dfrac{20-80}{5-20} \cdot \dfrac{20}{80} = 1$ #

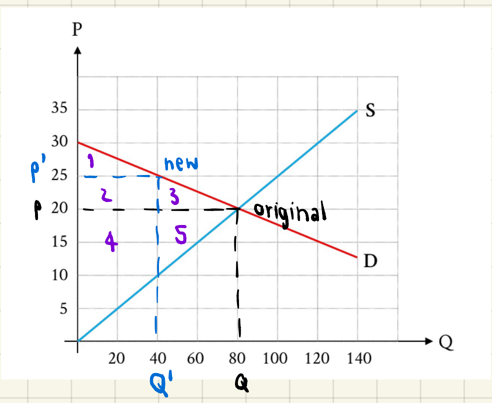
3.b)



CS $= \frac{1}{2} \times 80 \times 10 = 400$ #

PS $= \frac{1}{2} \times 80 \times 20 = 800$ #

3.c)



original CS $= 1+2+3 \rightarrow \frac{1}{2} \times 10 \times 80 = 400$

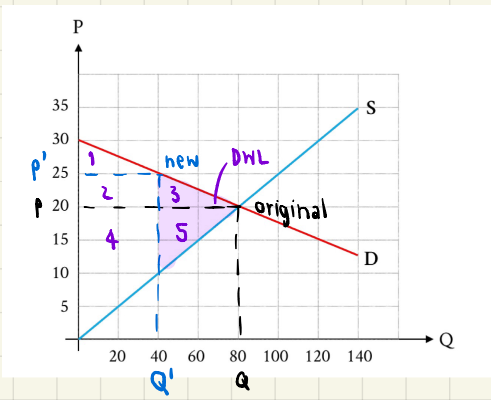
original PS $= 4+5 \rightarrow \frac{1}{2} \times 20 \times 80 = 800$ → more inelastic = more surplus

new CS $= 1 \rightarrow \frac{1}{2} \times 5 \times 40 = 100$

new PS $= 2+4 \rightarrow \frac{1}{2} \times 40 \times 40 = 800$ → more inelastic = more surplus

{ Overall, we get less CS and constant PS, which means less consumers participating this market because they get less benefit / surplus.

3.d)



Surplus	before	after	difference
CS	1+2+3	1	−2 −3
PS	4+5	2+4	+2 −5
Total	1+..+5	1+2+4	−3 −5 → DWL

∴ There is deadweight loss, which are parts 3+5 $= \frac{1}{2} \times 15 \times 40 = 300$ #

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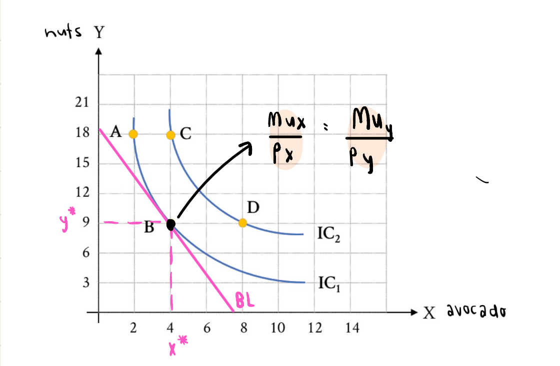
4. a) To have consumer's equilibrium at point B = to have IC_1 & pink BL tangent to each other at point B. (slope of IC = slope of BL)

- budget is all spent
- consumers get max. amount of utility



note :

slope of IC = $|MRS_{xy}| = \left|\frac{\Delta y}{\Delta x}\right| = \frac{MU_x}{MU_y}$

slope of BL = relative price = $MRMS_{xy} = \frac{\Delta y}{\Delta x} = \frac{P_x}{P_y}$

⇒ condition that maximize consumer's utility is $\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$ (slope of IC = slope of BL)

$\frac{MU_x}{MU_y}$ (at B) $= \left|\frac{9-18}{4-2}\right| = \left|\frac{-9}{2}\right| = \frac{9}{2}$ and $\frac{P_x}{P_y} = \frac{P_x}{10}$

$\therefore \frac{MU_x}{MU_y} = \frac{P_x}{P_y}$ is $\frac{9}{2} = \frac{P_x}{10} \rightarrow 90 = 2P_x \rightarrow P_x = 45$

4. b) $P_x = 180$, find P_y by $\frac{MU_x}{MU_y}$ (at B) $= \frac{P_x}{P_y}$

$\frac{9}{2} = \frac{180}{P_y}$

$P_y = \frac{180 \cdot 2}{9} = 40$

So, at point B (4,9) we get BL equation.

$I = 180(4) + 40(9)$, let I = budget

$I = 1{,}080$

∴ require 1,080 baht to achieve the equilibrium on point B #

4. c) $|MRS_{xy}| = \left|\frac{\Delta y}{\Delta x}\right| = \left|\frac{9-18}{8-4}\right| = \frac{9}{4} = \frac{MU_x}{MU_y}$ ⇒ $MU_y = \frac{4}{9} \cdot MU_x$

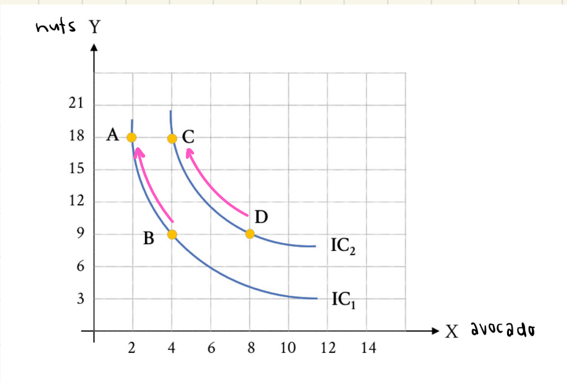
point D (8,9) = TU = 12 $= MU_x \cdot X + MU_y \cdot Y$

$= MU_x \cdot 8 + (\frac{4}{9} MU_x) \cdot 9$

$= 12\, MU_x$

$MU_x = \frac{12}{12} = 1$ #

4. d)



- From point B to A, consumer is willing to gives up 2 units of avocados for 9 units of nuts
  (x = 4) or consume 4 avocado
- From point D to C, consumer gives up 4 units of avocados for 9 units of nuts
  (x = 8) or consume 8 avocado

As x increases (consume more avocado), consumer is willing to give up more & more avocados for the same amount of nut, which according to law of diminishing utility.