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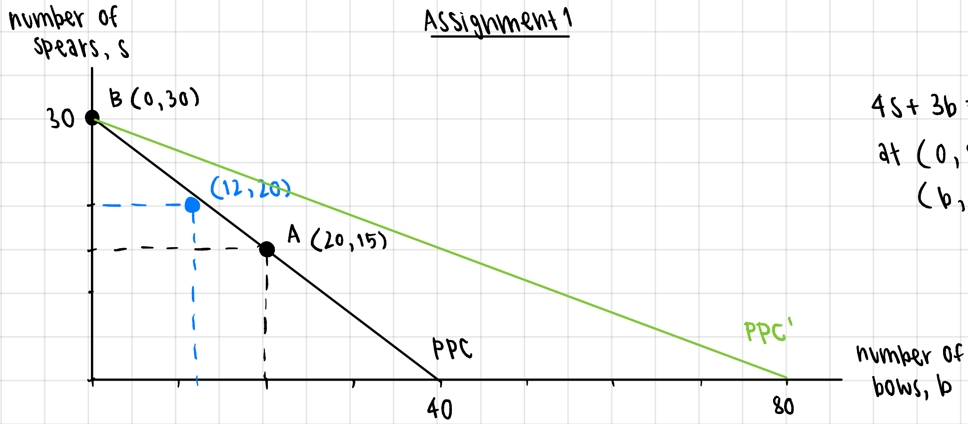
Assignment 1

1. a)



$4s + 3b = 120$

at $(0, s)$, $s = 120/4 = 30$

$(b, 0)$, $b = 120/3 = 40$

Due to constant opportunity cost, spears and bows are perfectly substitutable with linear PPC.

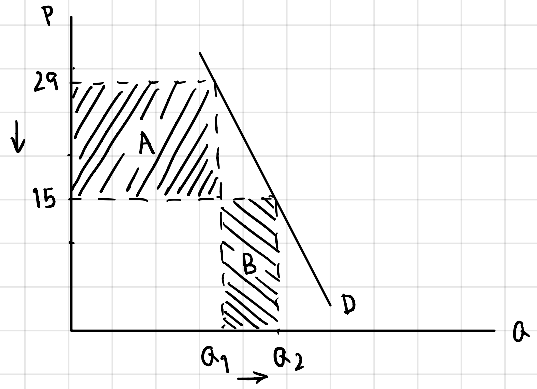
b) By moving from point A to B, gain 15 spears and lose 20 bows. Hence, the opportunity cost for making 1 spear is $\frac{20}{15} \approx 1.33$ bows.

c) It is possible since the point (12, 20) doesn't exceed the curve. Although the resource is not fully utilised, the efficiency could not be concluded since other aspects should also be considered. For instance, the new wood source could also be used to produce other items as well.

d) The x-intercept of PPC extends to $(80, 0)$: $4s + 1.5b = 120$.
The opportunity cost $\left(\frac{1}{\text{slope}}\right)$ of making 1 spear will then increase to $\frac{80}{30} \approx 2.67$ bows.

2. a) $\varepsilon_d = \frac{Q_2 - Q_1}{P_2 - P_1} \cdot \frac{P_1}{Q_1} = \frac{21000 - 20000}{29 - 42} \cdot \frac{42}{20000} \approx -0.162$ #

b) $|\varepsilon_d| < 1$, the price elasticity of demand is inelastic. Therefore, further reduction in price will not increase the total revenue (TR).



⇐ Steep demand curve due to its inelasticity.
$TR = P \cdot Q$
Area A is larger than area B, hence more total revenue is lost than gained when price is reduced.

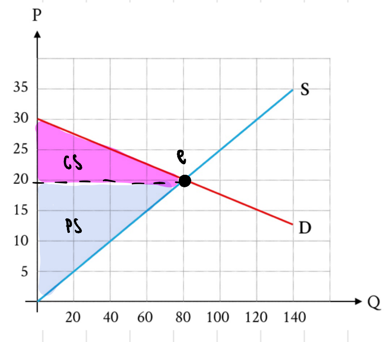
3. a) $\varepsilon_{d(e)} = \frac{Q_2 - Q_1}{P_2 - P_1} \cdot \frac{P_1}{Q_1} = \frac{40 - 80}{25 - 20} \cdot \frac{20}{80} = -2$ #

$\varepsilon_{s(e)} = \frac{120 - 80}{30 - 20} \cdot \frac{20}{80} = 1$ #

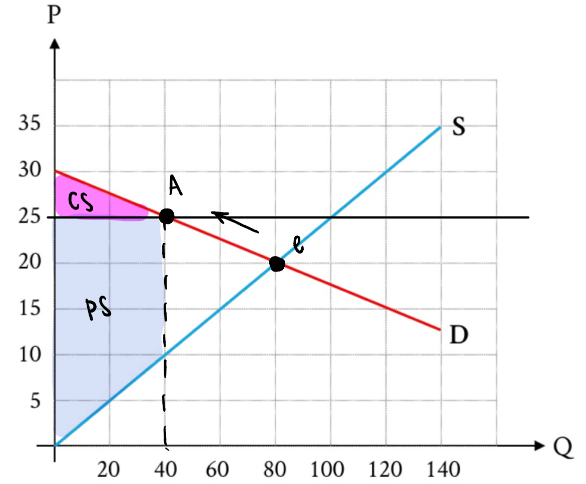
When price increases by 1% quantity demanded decreases by 2% and quantity supplied increases by 1%.

b) $CS = \frac{10 \cdot 80}{2} = 400$ #

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



c)



The point of trade will shift from e to A, where consumer surplus decreases as less consumers will be participating in this market. Although there is an excess supply, producer surplus still remains constant.

$CS = \frac{5 \cdot 40}{2} = 100_{\#}$

$PS = \frac{25 + 15}{2} \cdot 40 = 800_{\#}$

d) There will be a deadweight loss as the collusion results in a reduction of total surplus due to allocative inefficiency.

Deadweight loss = total surplus before - total surplus after

$= (400 + 800) - (100 + 800) = 300_{\#}$

4. a) To have the consumer equilibrium on point B, the budget line must be tangent to IC at point B.

$|MRS_{xy}| = MRMS$

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

$$\left|\frac{9-18}{4-2}\right| = \frac{9}{2} = \frac{P_x}{10} \qquad \therefore P_x = 45 \text{ baht per unit}_{\#}$$

b) $\frac{MU_x}{MU_y} = \frac{9}{2} = \frac{180}{P_y} \Rightarrow P_y = 40$ point B (4,9)

budget required, $I = P_x \cdot x + P_y \cdot y = 180 \cdot 4 + 40 \cdot 9 = 1080$ baht $_{\#}$

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

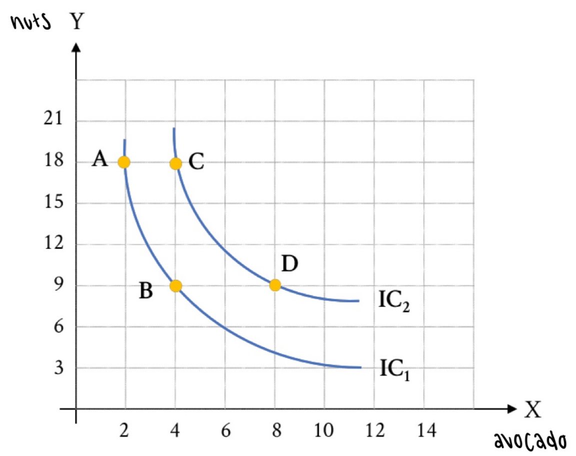
point D (8,9) : $TU = 12 = MU_x \cdot x + MU_y \cdot y$

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

$= 12\, MU_x$

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

d)



Based on IC_1 and IC_2:

From point B to A, consumer is willing to give up 2 units of avocado for 9 units of nuts when x = 2.

From point D to C, consumer gives up 4 units of avocado for 9 units of nuts when x = 4.

As x or the unit of avocado consumed increases, consumer is willing to give up more avocados for the same amount of nut.

∴ This suggests the reduction in utility (satisfaction) when consumer keeps consuming avocado, which is in accordance to the law of diminishing utility.