Sarita Chanokhamchai 6404641034

Assignment 2

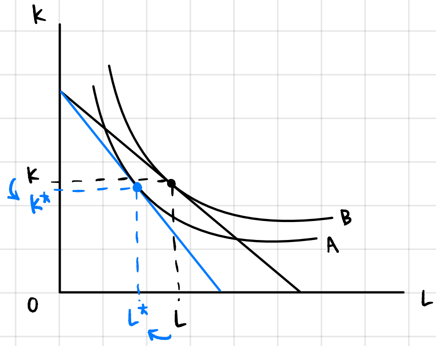
1. a) $q = f(K,L)$, in the long-run there is no fixed factor

$MRTS = \frac{\Delta K}{\Delta L} = \frac{MP_L}{MP_K} = \frac{6}{8} = 0.75$ # In order to keep the same level of output, sacrifice 0.75 unit of capital requires 1 unit of labour.

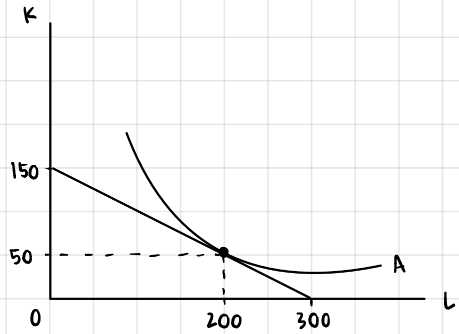
cost-minimization condition is $MRTS = MRMS$

$$\frac{\Delta K}{\Delta L} = \frac{MP_L}{MP_K} = \frac{w}{r} \Rightarrow \frac{MP_L}{w} = \frac{MP_K}{r} \qquad \text{at } Q_0,\ r = \frac{3}{0.75} = \$4 \ \#$$

b)



2. a)



$TC = L \cdot w + K \cdot r = 200 \cdot 10 + 50 \cdot 20 = \$3{,}000$

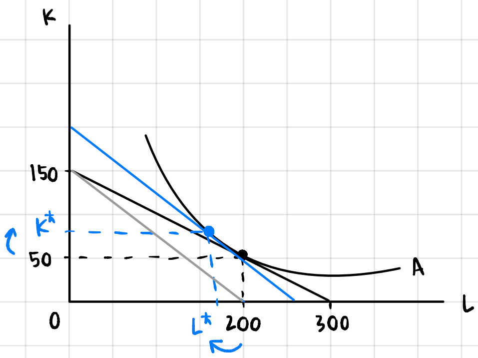
cost-minimization condition: $MRTS = MRMS$

$$\left|\frac{\Delta K}{\Delta L}\right| = \frac{w}{r}$$

$$\left|\frac{-150}{300}\right| = \frac{10}{20} = 0.5 \ \#$$

b) $\frac{MP_K}{MP_L} = \frac{w}{r}$ $(K,L) = (50, 200) \Rightarrow$ at equilibrium, $MP_L = \frac{8}{0.5} = 16$ bottles #

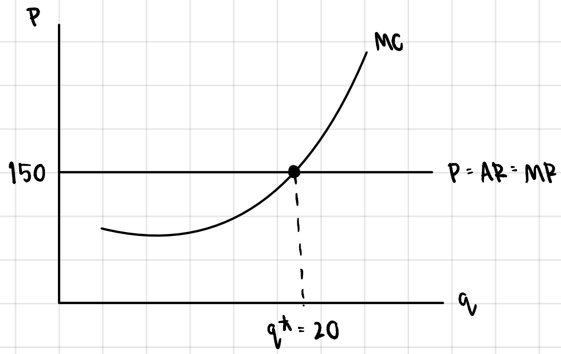
c)



When w increases, TC would have to increase in order to maintain the same level of output. The production becomes more capital-intensive.

d) In the short-run production, there is at least one fixed factor of production as firms usually take time to expand. Whereas in the long-run, all factors of production can be adjusted.

3. a)



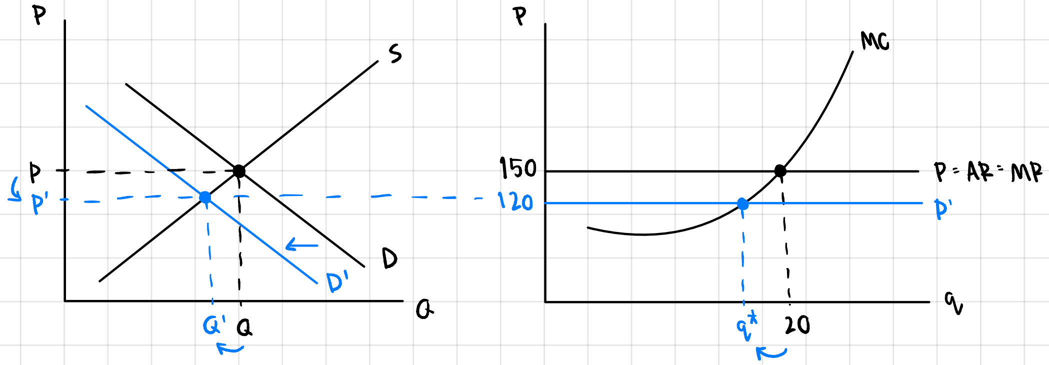
profit-maximizing condition: $MC = MR$

3\. b) $q^* = 20$ ATC = 180 AFC = 60

- AVC = ATC − AFC = ฿120
- TR = $P \cdot q$ = 150 · 20 = ฿3,000
- TC = ATC · q = 180 · 20 = ฿3,600
- π = TR − TC = −฿600 #

c) Yes, although the firm is experiencing loss, the firm is in the least loss situation where P > AVC. The difference between P and AVC can still be used to pay for the fixed costs, since fixed factors cannot be adjusted in the short-run.

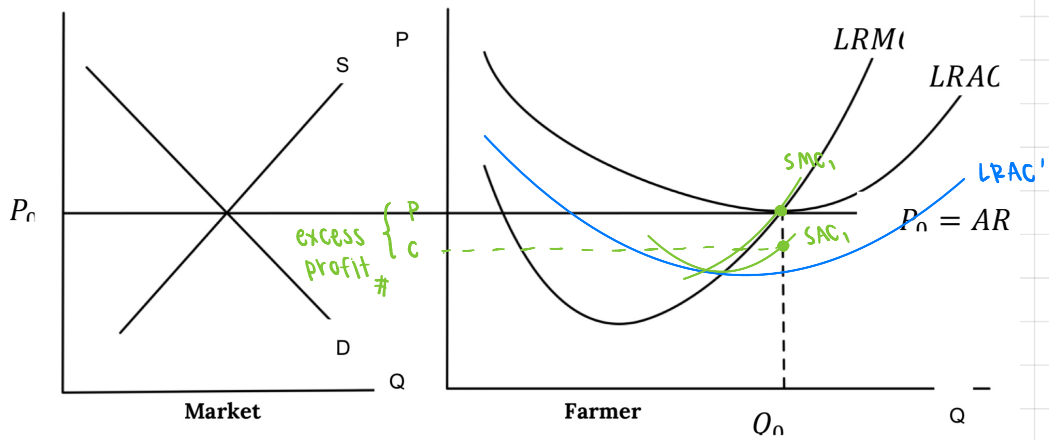
d)



As the market price drops, the equilibrium quantity and profit would also drop. Since P = AVC, continuing to produce at q^* or shutting down is indifferent.

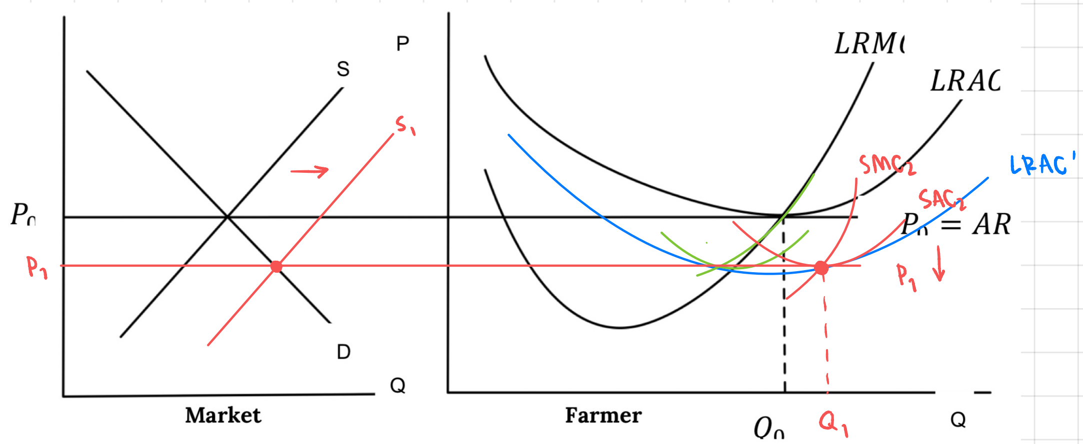
4\. a) Subsidy would lower TC, making LRAC drops.
Since every farmer is price taker in the perfect competition, competitive price and equilibrium quantity remain constant. Therefore, LRMC does not change as there is no change in q.

b) No, the profit maximization condition is when P = LRMC. Since both P and LRMC do not change, the optimal quantity to maximize profit remains at Q_0.



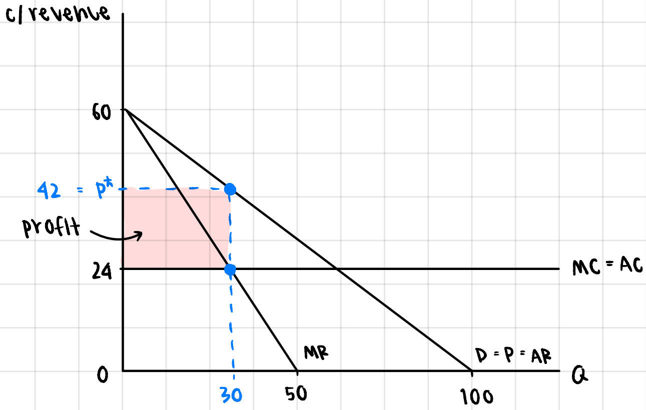
With lower LRAC, SAC at Q_0 gives average cost c. As P > c, there is an excess profit.

c) In the long-run, excess profit would attract new farmers into the market, causing an increase in supply.



The shift in supply leads to market price drop and an increase in optimal quantity to maximise profit.

5. a) When D is linear, MR is 2 times steeper $\Rightarrow$ MR : $P = 60 - 1.2Q$ #



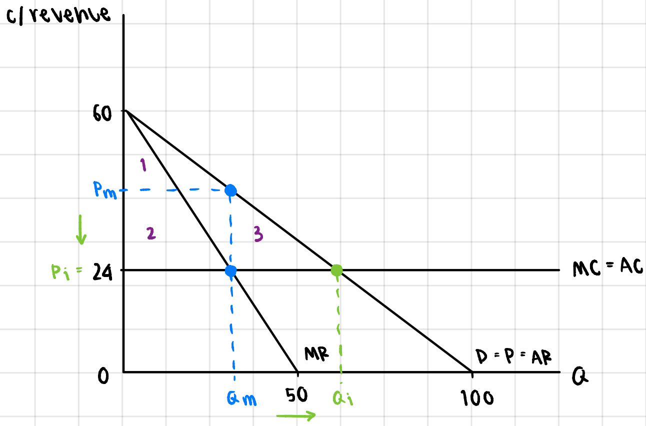
b) profit-maximizing condition : MR = MC

$60 - 1.2Q = 24$

$Q^* = 30$ units # $\Rightarrow$ $P = 60 - 0.6(30) = 42$

$\pi = (P - C) \cdot Q = (42 - 24) \cdot 30 = 540$ million-baht # $\Leftarrow$ shaded area

c)



ideal price : P = MC

At the ideal price, quantity increases from Q_m to Q_i.

before the intervention:

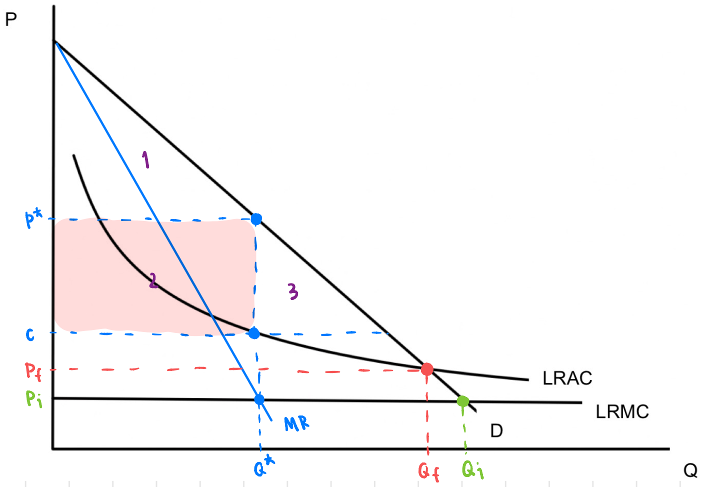
CS = 1   PS = 2 (π)   DWL = 3

after the intervention:

CS = 1 + 2 + 3   PS = -   DWL = -

The intervention prevents HL from taking advantage of the consumers and removes the dead weight loss.

6. a)



Equilibrium Q^* is where MR = LRMC.

CS : 1   producer's profit : 2

DWL : 3 $\hookrightarrow (P^* - C) \cdot Q^*$

b) Lerner's index, $i = \dfrac{P - MC}{P} = \dfrac{50 - 10}{50} = 0.8$ #

c) Ideal price : P = MC = \$ 10 # $\Rightarrow$ At P_i, the firm will experience loss as P < LRAC.

d) Fair price : P = LRAC $\Rightarrow$ At P_f, there is no deadweight loss because the firm is at normal profit.