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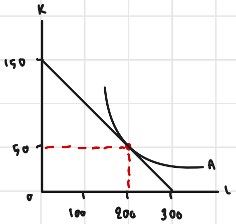
1a $MRTS = \frac{\Delta K}{\Delta L} = \frac{MP_L}{MP_K} = \frac{6}{8} = \boxed{0.75}$

cost-minimization condition → MRTS = MRMS

$\therefore \frac{\Delta K}{\Delta L} = \frac{MP_L}{MP_K} = \frac{w}{r} \rightarrow r = \frac{3}{0.75} = \boxed{\$4}$

1b

2a

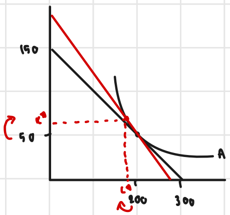


cost minimization condition → MRTS = MRMS

$\left|\frac{\Delta K}{\Delta L}\right| = \frac{w}{R} \rightarrow \left|\frac{-150}{300}\right| = \frac{10}{20} = \boxed{0.5}$

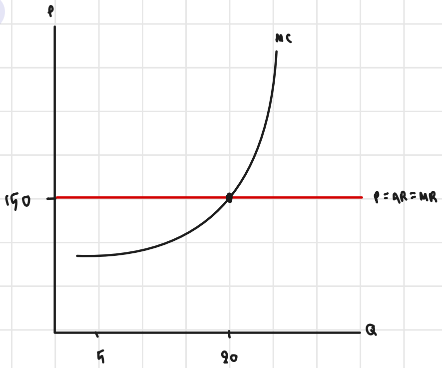
2b equilibrium $(K, L) = (50, 200)$ $\quad MP_L = \frac{8}{0.5} = \boxed{16 \text{ bottles}}$

2c



2d In the short-run at least one of the factor of productions is fixed. However, in the long-run, none of the factor of production is fixed. Thus, everything can be adjusted and change.

3a



3b average variable cost = ATC − AFC = 180 − 60 = $\boxed{120\ \$}$

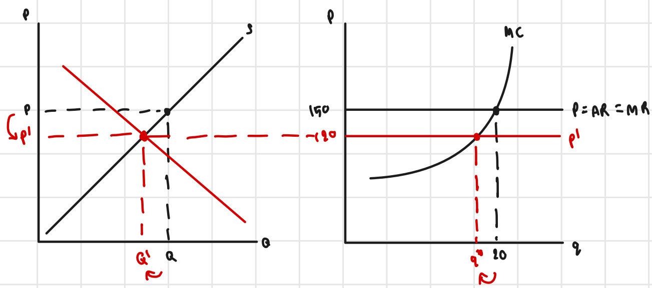
total revenue = p·q = 150 × 20 = $\boxed{3000\ \$}$

total cost = ATC · q = 180 × 20 = $\boxed{3600\ \$}$

profit = TR − TC = 3000 − 3600 = $\boxed{-600\ \$}$ (the company is making loss)

3c The firm should stay in the short run because it is experiencing the least lost situation where P > AVC. So, we can still use money from the fixed cost (which can't be adjusted in the short run) to pay for the differences between P and AVC.

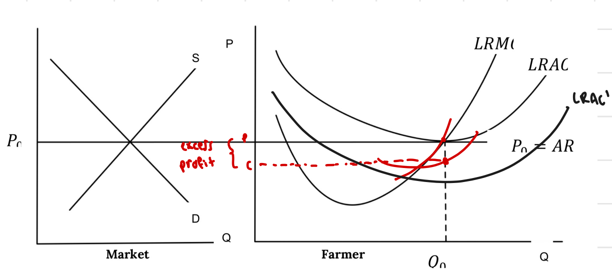
3d



∴ when the market price decrease, the equilibrium quantity will also decrease. So, because P = AVC, it is the same if the company continue to produce at q* or shut down.

4a LRAC will decrease due to the subsidy that lowers the total cost. The LRMC is constant because there is no change in q.

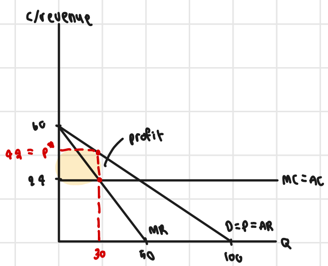
4b The quantity will not change. Since the profit maximization condition is P = LRMC, when both P and LRMC does not change, the optimal quantity to maximize profit will remain at Q_0.



∴ Because LRAC is lower, SAC at Q_0 gives average cost c. And since P > C, there will be excess profit.

4c In the long run, the excess profit will attract new farmers into the market, causing an increase in supply. Then, the shift in supply will cause the market price to drop and the increase in optimal quantity to maximise the profit.

5a MR is 2 times steeper when D is linear → $\boxed{MR = P = 60 - 1.2Q}$ //



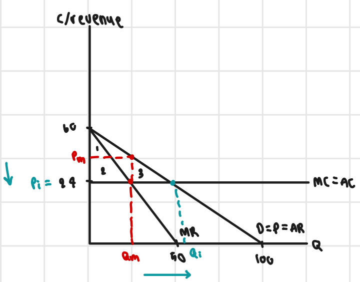
5b profit maximising condition : MR = MC

$60 - 1.2Q = 24$ → $\boxed{Q^* = 30 \text{ unit}}$

$P = 60 - 0.6(30) = 42$

$\pi = (P-C)\cdot Q = (42-24)\cdot 30 = \boxed{540 \text{ million baht}}$ //

5c



ideal price : P = MC

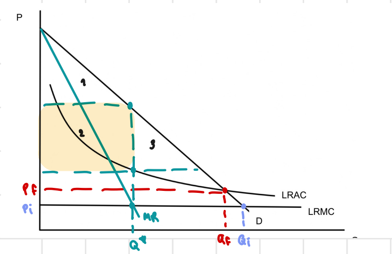
At the ideal price, quantity increases from Qm to Qi

before: CS = 1, PS = 2, DWL = 3

after: CS = 1+2+3, PS = -, DWL = -

∴ the intervention prevents MC from taking advantage of the consumers and removes the dwl.

6a



The equilibrium Q^* is when MR = LRMC

- CS = 1
- PS = 2 $(P^* - C)\cdot Q^*$
- DWL = 3

6b Lerner's index, $i = \dfrac{P - MC}{P} = \dfrac{50-10}{50} = \boxed{0.8}$ //

6c ideal price = P = MC = $\boxed{\$10}$ // ∴ At Pi, the firm will experience loss as P < LRAC.

6d fair price = P = LRAC ∴ At Pf, there is no deadweight loss because the firm is at a normal point.