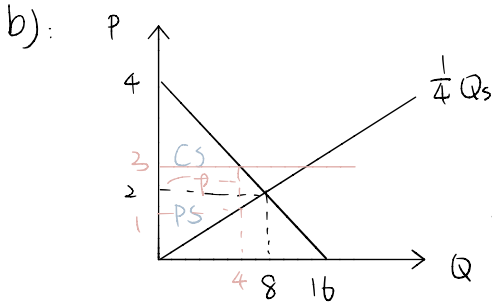


C1:

a): The domestic market clears when $Q_D = Q_S \Rightarrow 16 - 4P = 4P$
 $P^* = 2 < P_W = 3$

So The traded price will be 3.

$Q_S = 3 \times 4 = 12$ $Q_S^{\text{domestic}} = \text{traded} = 2 \times 4 = 8$ Extra supply goes to export: $12 - 8 = 4$



$$Q_D = 16 - 4P$$

$$4P = 16 - Q_D$$

$$P = 4 - \frac{1}{4} Q_D$$

$$Q_S = 4P$$

$$P = \frac{1}{4} Q_S$$

at $P=3$

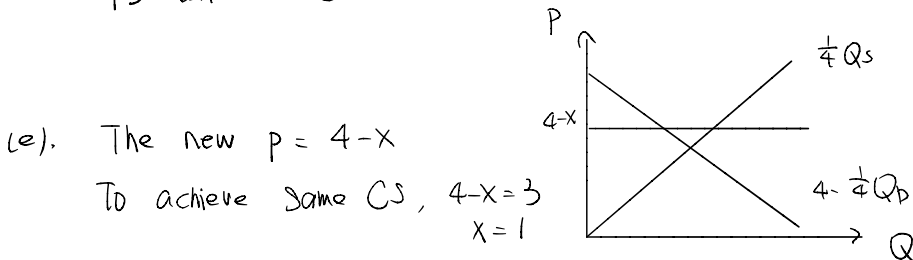
$$CS = \frac{1}{2} \times 1 \times 4 = 2$$

$$PS = \frac{(2+3) \times 4}{2} = 10$$

(c): At $P=4$, $Q_S = 4P = 16$
 $Q_D = 0$

All Q_S produced (=16) goes to export.

(d): CS is reduced while PS is increased. At $P=4$, $CS=0$,
 PS takes all CS.



$Q_S = 3 \times 4 = 12$ $Q_S^{\text{domestic}} = \text{traded} = 2 \times 4 = 8$ Extra supply goes to export: $12 - 8 = 4$

C2:

a) In Cournot, each firm is maximizing its own profit.

$$\text{Firm A: } \pi_A = \max_{q_A} \left(320 - \frac{1}{5}(q_A + q_B) \right) q_A - 20q_A$$

$$\text{F.O.C: } 320 - \frac{2}{5}q_A - \frac{1}{5}q_B - 20 = 0$$

$$\frac{2}{5}q_A = 300 - \frac{1}{5}q_B$$

$$q_A = 750 - \frac{1}{2}q_B \Rightarrow \text{A's best response given } q_B$$

Similarly for firm B:

$$\pi_B = \max_{q_B} \left(320 - \frac{1}{5}(q_A + q_B) \right) q_B - 20q_B$$

$$\text{F.O.C: } 320 - \frac{1}{5}q_A - \frac{2}{5}q_B - 20 = 0$$

$$q_B = 750 - \frac{1}{2}q_A$$

Cournot occurs when $q_A = q_B$.

B's best response given q_A

$$\begin{cases} q_A = 750 - \frac{1}{2}q_B \\ q_B = 750 - \frac{1}{2}q_A \end{cases} \Rightarrow \begin{cases} q_A^{*NE} = 500 \\ q_B^{*NE} = 500 \end{cases}$$

$$\pi_A^{NE} = 50000$$

$$\pi_B^{NE} = 50000$$

C2:

b) In Cournot, each firm is maximizing its own profit.

$$\text{Firm A: } \pi_A = \max_{q_A} \left(320 - \frac{1}{5}(q_A + q_B) \right) q_A - 20q_A$$

$$\text{F.O.C: } 320 - \frac{2}{5}q_A - \frac{1}{5}q_B - 20 = 0$$

$$\frac{2}{5}q_A = 300 - \frac{1}{5}q_B$$

$$q_A = 750 - \frac{1}{2}q_B \Rightarrow \text{A's best response given } q_B$$

Similarly for firm B:

$$\pi_B = \max_{q_B} \left(320 - \frac{1}{5}(q_A + q_B) \right) q_B - 140q_B$$

$$\text{F.O.C: } 320 - \frac{1}{5}q_A - \frac{2}{5}q_B - 140 = 0$$

$$q_B = 450 - \frac{1}{2}q_A$$

Cournot occurs when $q_A = q_B$.

B's best response given q_A

$$\begin{cases} q_A = 750 - \frac{1}{2}q_B \\ q_B = 450 - \frac{1}{2}q_A \end{cases} \Rightarrow \begin{cases} q_A^{*NE} = 700 \\ q_B^{*NE} = 600 \end{cases}$$

$$\pi_A^{NE} = 98000$$

$$\pi_B^{NE} = 14000$$

C2:

C) In Cournot, each firm is maximizing its own profit.

$$\text{Firm A: } \pi_A = \max_{q_A} \left(320 - \frac{1}{5}(q_A + q_B) \right) q_A - 20q_A$$

$$\text{F.O.C: } 320 - \frac{2}{5}q_A - \frac{1}{5}q_B - 20 = 0$$

$$\frac{2}{5}q_A = 300 - \frac{1}{5}q_B$$

$$q_A = 750 - \frac{1}{2}q_B \Rightarrow \text{A's best response given } q_B$$

Similarly for firm B:

$$\pi_B = \max_{q_B} \left(320 - \frac{1}{5}(q_A + q_B) \right) q_B - 40q_B - 2500$$

$$\text{F.O.C: } 320 - \frac{1}{5}q_A - \frac{2}{5}q_B - 40 = 0$$

$$q_B = 450 - \frac{1}{2}q_A$$

Cournot occurs when $q_A = q_B$.

B's best response given q_A

$$\begin{cases} q_A = 750 - \frac{1}{2}q_B \\ q_B = 450 - \frac{1}{2}q_A \end{cases} \Rightarrow \begin{cases} q_A^{*NE} = 700 \\ q_B^{*NE} = 100 \end{cases}$$

$$\pi_A^{NE} = 98000$$

$$\pi_B^{NE} = 11500$$

