

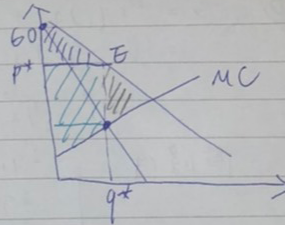
Week 15

① $60 - 2q = 30$

$q = 15$

$p = 45$

$\pi = 45 \times 15 - 30 \times 15 = 225 = \text{PS}$



② $60 - q = 30 \quad q = 30$

$CS = 0$

$\pi = \frac{30 \times 30}{2} = 450$

$TS = 0 + 450 = 450$

$DWL = 0$

③ $\pi = p(q_1)q_1 + p(q_2)(q_2 - q_1) - TC(q_2) = (60 - q_1)q_1 + (60 - q_2)(q_2 - q_1) - 30q_2$
 $= q_1^2 - q_2^2 + 30q_1 + q_1q_2$

$-p_{q_1}^{CE} \quad -2q_1 + q_2 = 0 \quad -2q_2 + 30 + q_1 = 0$

$\begin{cases} -2q_1 + q_2 = 0 \\ q_1 - 2q_2 = -30 \end{cases} \quad \begin{cases} q_1 = 10 \\ q_2 = 20 \end{cases}$

$\begin{cases} p_1 = 50 \\ p_2 = 40 \end{cases}$

$\pi = 50 \times 10 + 40 \times (20 - 10) - 30 \times 20$
 $= 300$

$CS = \left(\frac{10 \times 10}{2} \right) + \left(\frac{10 \times 10}{2} \right) = 100$

$TS = 100 + 300 = 400$

$DWL = 450 - 400 = 50$

No.

Date

$$\begin{aligned}
 \textcircled{b} \quad \pi &= P(q_1)q_1 + P(q_2)(q_2 - q_1) + P(q_3)(q_3 - q_2) - TC(q_3) \\
 &= (60 - q_1)q_1 + (60 - q_2)(q_2 - q_1) + (60 - q_3)(q_3 - q_2) - 3q_3 \\
 &= -q_1^2 - q_2^2 - q_3^2 + 50q_3 + q_1q_2 + q_2q_3
 \end{aligned}$$

- 階段条件

$$\begin{cases} -2q_1 + q_2 = 0 \\ -2q_2 + q_1 + q_3 = 0 \\ -2q_3 + 30 + q_2 = 0 \end{cases} \quad \begin{cases} q_1 = 7.5 \\ q_2 = 15 \\ q_3 = 22.5 \end{cases}$$

$$P_1 = 52.5 \quad P_2 = 45 \quad P_3 = 52.5$$

$$\begin{aligned}
 \pi &= 52.5 \times 7.5 + 45(15 - 7.5) + 52.5(22.5 - 15) \\
 &\quad - 30 \times 22.5 = 337.5
 \end{aligned}$$