

week 14

(A)

水手加多便:

$$Q = Q_A + Q_B = 180 - 2P = Q_d$$

$$\begin{cases} P = 100 - Q_A \\ P = 80 - Q_B \end{cases} \Rightarrow \begin{cases} Q_A = 100 - P \\ Q_B = 80 - P \end{cases}$$

$$\pi = TR - TC$$

$$= P(Q) \cdot Q - TC(Q)$$

$$= (90 - 0.5Q) \cdot Q - 20Q$$

$$\frac{d\pi}{dQ} = 0 \Leftrightarrow Q^* = 70$$

$$P^* = 55$$

$$\pi^* = 55 \times 70 - 20 \times 70$$

$$= 2450 = PS_m$$

$$P_i = 100 - Q_A = 100 - P^* = 55$$

$$(B) CS = CS_A + CS_B$$

$$\Delta = \frac{1}{2} Q^* (P - P^*)$$

$$CS_A = \frac{1}{2} (100 - 55) \times 55$$

$$CS_B = \frac{1}{2} (80 - 55) \times 55$$

$$CS = 1012.5 + 312.5 = 1325$$

$$TS = PS + CS = 1325 + 2450$$

$$= 3775$$

(C) 兩段定價法:

Max π :

$$CS_B = (80 - P) \times Q_B / 2$$

$$= (80 - P)^2 / 2$$

$$+ U = (P - 20)(180 - 2P)$$

$$Max \pi = 2CS_B + U$$

$$= -P^2 + 60P + 2800$$

$$\frac{d\pi}{dP} = 0, P^* = 30$$

$$\pi = CS_B = 1250$$

$$Q_A = 70, Q_B = 50, Q = 120$$

$$\pi = 3700 = PS$$

$$CS = CS_A + CS_B = \frac{1}{2} (100 - 30) \times 70 + \frac{1}{2} (80 - 30) \times 50$$

$$= 1200$$

$$TS = CS + PS = 1200 + 3700 = 4900$$

