

Week 14

$$(1) MR_A = MC: 100 - 2Q_A = 20 \Rightarrow Q_A = 40 \Rightarrow P_A = 60$$

$$MR_B = MC: 80 - 2Q_B = 20 \Rightarrow Q_B = 30 \Rightarrow P_B = 50$$

$$\pi = 60 \times 40 + 50 \times 30 - 20 \times (40 + 30) = 2500 = PS$$

$$CS = CS_A + CS_B = 80 \times 40 + 45 \times 30 = 1250; TS = CS + PS = 3750$$

(2) 先求需求，水平木架 (先求 - 1/2 1/2)

$$\begin{cases} P = 100 - Q, & Q \leq 20 \\ P = 90 - 0.5Q, & Q > 20 \end{cases} \Rightarrow \begin{cases} MR_1 = 100 - 2Q, & Q \leq 20 \\ MR_2 = 90 - Q, & Q > 20 \end{cases}$$

$$\text{令 } MR_1 = MC \Rightarrow 100 - 2Q = 20 \Rightarrow Q = 40$$

$$\text{再令 } MR_2 = MC \Rightarrow 90 - Q = 20 \Rightarrow Q = 70 \text{ (令)} \Rightarrow P = 55$$

$$\Rightarrow \pi_2 = 55 \times 70 - 20 \times 70 = 2450 = PS$$

$$CS = CS_A + CS_B = 1012.5 + 312.5 = 1325, \text{ 又 } TS = 3775$$

$$(4) F = (80 - P) \times Q / 2 = (80 - P)(80 - P) / 2 = (80 - P)^2 / 2$$

$$\pi = 2F + (P - 20)(Q_A + Q_B) = (80 - P)^2 + (P - 20)(180 - 2P) = P^2 + 60P + 1280$$

由 -1/2 可得解: $P = 30, \text{ 又 } F = 1250, Q = 120, \pi = 3700$

$$CS = CS_A(P=30) + CS_B(P=30) - 2F = 2450 + 1250 - 2500 = 1200$$

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