

Week 14

$$A) MR_A = 100 - 2Q_A = 20 \quad Q_A = 40 \quad P_A = 60$$

$$MR_B = 80 - 2Q_B = 20 \quad Q_B = 30 \quad P_B = 50$$

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

$$CS = CS_A + CS_B = 800 + 450 = 1250 \quad TS = CS + PS = 3750$$

$$B) P = 100 - Q \quad Q \leq 20 \quad \Rightarrow \begin{cases} MR_1 = 100 - 2Q \quad Q \leq 20 \\ MR_2 = 20 - Q \quad Q \geq 20 \end{cases}$$

$$= 90 - 0.5Q > 20$$

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

$$MR_2 = MC \Rightarrow 20 - Q = 20 \quad Q = 0 \quad (\text{不合}) \Rightarrow P = 55$$

$$\pi = 55 \times 10 - 20 \times 10 = 2450 = PS$$

$$CS = CS_A + CS_B = 1012.5 + 512.5 = 1525 \quad TS = 3975$$

$$C) F = 80 - \frac{Q^2}{2} = 80 - \frac{1}{2} (80 - P)^2$$

$$T_0 = (80 - P)^2 + (P - 20)(180 - 2P) = -P^2 + 60P + 2800$$

$$P = 30 \quad F = 1250 \quad Q = 120 \quad \pi = 3700$$

$$CS = 2450 + 1250 - 2500 = 1200$$

$$TS = 1200 + 3700 = 4900$$