(A) $MR_A = MC \Rightarrow 100 - 2q_A = 20 \Rightarrow q_A = 40 \Rightarrow p_A = 60$

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

(B) 先將需求水平相加

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

令 $MR_1 = MC \Rightarrow 100 - 2q = 20 \quad q = 40$ (捨)

或 $MR_2 = MC \Rightarrow 90 - q = 20 \quad q = 70$ (合) $\Rightarrow p = 55$

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

$CS = CS_A + CS_B = 1325 \qquad TS = 3775$

(C) $F = (80 - p) \times q / 2 = (80 - p)(80 - p)/2 = (80 - p)^2 / 2$

$\pi = 2F + (p - 20)(q_A + q_B) = (80 - p)^2 + (p - 20)(180 - 2p) = -p^2 + 60p + 2800$

由一階條件可得 $p = 30$ 故下訂 $250 \quad q = 170 \quad \pi = 3700$

$CS = CS_A(P = 30) + CS_B(P = 30) - 2F = 2450 + 1250 - 2000 = 1700$

$TS = CS + PS = 1700 + 3700 = 4400$