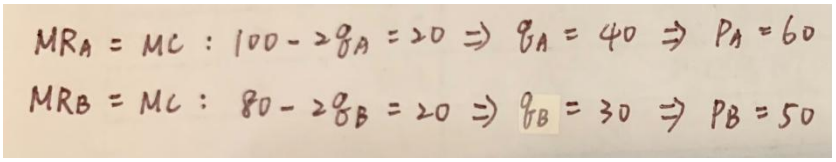
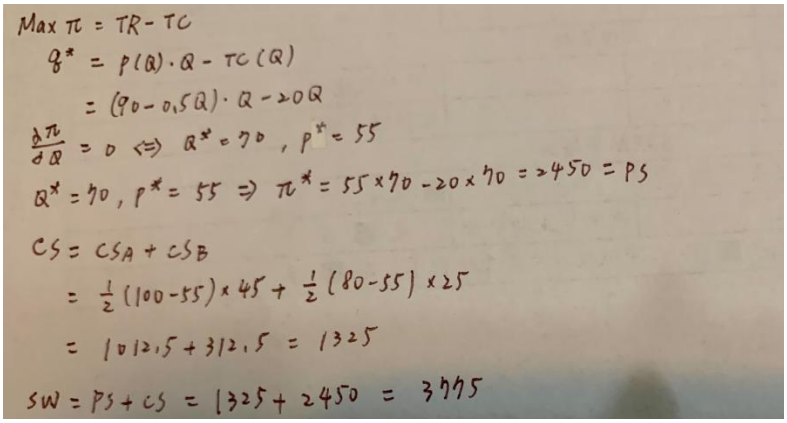
習題 3

(A)


$MR_A = MC : 100 - 2q_A = 20 \Rightarrow q_A = 40 \Rightarrow P_A = 60$
$MR_B = MC : 80 - 2q_B = 20 \Rightarrow q_B = 30 \Rightarrow P_B = 50$

(B)


Max π = TR - TC
$q^* = p(Q) \cdot Q - TC(Q)$
$= (90 - 0.5Q) \cdot Q - 20Q$
$\frac{\partial \pi}{\partial Q} = 0 \Leftrightarrow Q^* = 70, P^* = 55$
$Q^* = 70, P^* = 55 \Rightarrow \pi^* = 55 \times 70 - 20 \times 70 = 2450 = PS$
$CS = CS_A + CS_B$
$= \frac{1}{2}(100-55) \times 45 + \frac{1}{2}(80-55) \times 25$
$= 1012.5 + 312.5 = 1325$
$SW = PS + CS = 1325 + 2450 = 3775$

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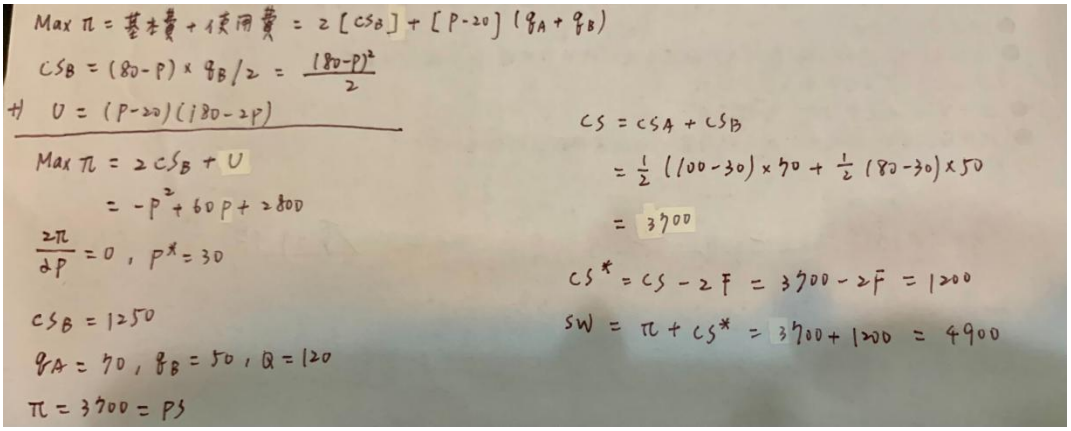
Max π = 基本費 + 使用費 $= 2[CS_B] + [P-20](q_A + q_B)$
$CS_B = (80-P) \times q_B/2 = \frac{(80-P)^2}{2}$
+) $U = (P-20)(180-2P)$
Max $\pi = 2CS_B + U$
$= -P^2 + 60P + 2800$
$\frac{\partial \pi}{\partial P} = 0, P^* = 30$
$CS_B = 1250$
$q_A = 70, q_B = 50, Q = 120$
$\pi = 3700 = PS$
$CS = CS_A + CS_B$
$= \frac{1}{2}(100-30) \times 70 + \frac{1}{2}(80-30) \times 50$
$= 3700$
$CS^* = CS - 2F = 3700 - 2F = 1200$
$SW = \pi + CS^* = 3700 + 1200 = 4900$