W14 HW

No.

Date

習題3 需求函數 $P_A = 100 - q_A$，$P_B = 80 - q_B$，廠商成本函數 $TC = 20q$

(A) 求採取第三級差別取價下之訂價、利潤、消費者剩餘、總剩餘

能夠區分兩類消費者

$100 - q_A = 20 \quad 80 = q_A$ $\quad 80 \times 20$

$80 - q_B = 20 \quad 60 = q_B$ $\quad MR_A = MC : 100 - 2q_A = 20$.

$\Rightarrow q_A = 40, P_A = 60$

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

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

$CS = 800 + 450 = 1250$

$TS = CS + PS = 3750$

(B) 無法區分兩類消費者，決定這兩類消費者訂定相同價格，求 "

$P = 100 - q, \ q \le 20$ $\quad MR_1 = 100 - 2q, \ q \le 20$

$= 90 - 0.5q, \ q > 20$ $\Rightarrow$ $MR_2 = 90 - q, \ q > 20$

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

再令 $MR_2 = MC \Rightarrow 90 - q = 20 \Rightarrow q = 70 \rightarrow P = 55$

故 $TS = 3775$

$CS = CS_A + CS_B$

$\Rightarrow 1012.5 + 312.5$

$= 1325$

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

$= 2450 = PS$

(C) 無法區分兩類消費者，採兩段訂價法，求廠商所定的基本費與每次的使用費，計算出廠商利潤、消費者剩餘、總剩餘

$F = \frac{(80-P) \times q}{2} = \frac{(80-P)(80-P)}{2} = \frac{(80-P)^2}{2}$

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

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

$P = 30$，故 $F = 1250$，$q = 120$，$\pi = 3700$

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

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