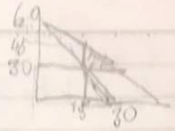
2, $P = 60 - q$ $TC = 30q$

a, PS=? CS=? TS=? DWL=?



MR=MC

$60-2q = 30$ $\quad \pi = (45\cdot 15) - 30(15)$

$q = 15$ $\quad P = 45$ $\quad PS = 225$ $\quad CS = 15\times 15\times\frac{1}{2} = 112.5$

$TS = 225 + 112.5$ $\quad DWL = 112.5$

$= 337.5$

B, $P = MC$

$60 - q = 30$ $\quad \pi = \frac{1}{2}\times 30\times 30$ $\quad CS = 0$ $\quad DWL = 0$

$q = 30$ $\quad P = 30$ $\quad = 450$ $\quad TS = 450$

C, $\pi = P(q_1)q_1 + P(q_2)(q_2 - q_1) - TC(q_2)$ 二级，二价格区

$= (60-q_1)q_1 + (60-q_2)(q_2-q_1) - 30q_2$

$= -q_1^2 - q_2^2 + 30q_2 + q_1q_2$

$-2q_1 + q_2 = 0$

$-2q_2 + 30 + q_1 = 0$

$\pi = 50\times 10 + 40(20-10) - 30\times 20$

$= 300$

$q_1 = 10$ $\quad q_2 = 20$

$CS = 10\times 10\times\frac{1}{2} + 10\times 10\times\frac{1}{2} = 100$

$TS = 100 + 300 = 400$

$DWL = 450 - 400 = 50$

D, $\pi = P(q_1)q_1 + P(q_2)(q_2-q_1) + P(q_3)(q_3-q_2) - TC(q_3)$ 二级，三价

$= (60-q_1)q_1 + (60-q_2)(q_2-q_1) + (60-q_3)(q_3-q_2) - 30q_3$

$-q_1^2 - q_2^2 - q_3^2 + 30q_3 + q_1q_2 + q_2q_3$

$-2q_1 + q_2 = 0$ $\quad -2q_2 + q_1 + q_3 = 0$ $\quad -2q_3 + 30 + q_2 = 0$

$q_1 = 7.5$ $\quad q_2 = 15$ $\quad q_3 = 22.5$

52.5 $\quad$ 45 $\quad$ 52.5

$\pi = 52.5\times 7.5 + 45(15-7.5) + 37.5(22.5-15) - 30(22.5)$

$= 337.5$

$CS = (7.5\times 7.5\times\frac{1}{2})\times 3 = 84.375$ $\quad TS = 84.375 + 337.5 = 421.875$

$DWL = 450 - 421.875 = 28.125$

3, $q_A = 10P_A^{-2}$ $\quad q_B = 5P_B^{-4}$

$\ln q_A = \ln(10P_A^{-2})$

$= \ln 10 + \ln P_A^{-2}$

$= -2\ln P_A$

$E_d = \frac{\ln q_A}{\ln P_A} = \frac{-2\ln P_A}{\ln P_A} = |-2| = 2$ $\quad E_d^B = -4$

$MC = P_A(1-\frac{1}{E_d^A}) = P_B(1-\frac{1}{E_d^B})$

$10 = P_A(1-\frac{1}{2}) = P_B(1-\frac{1}{4})$

$P_A = 20$

$P_B = \frac{40}{3}$

4. $P_A = 100 - q_A$ $P_B = 80 - q_B$ $TC = 20q$

a) $MR = MC$ $100 - 2q_A = 20$ $q_A = 40$ $P_A = 60$

b) $MR = MC$ $80 - 2q_B = 20$ $q_B = 30$ $P_B = 50$

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

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

b) $MR_1 = 100 - 2q$ $q \le 20$

$MR_2 = 90 - q$ $q > 20$

$MR_1 = MC$ $100 - 2q = 20$

$q = 40$ not match

$MR_2 = MC$ $90 - q = 20$

$q = 70$ match

$CS = CS_A + CS_B = 1012.5 + 312.5 = 1325$ $TS = 3775$

c) $F = (80 - P)\frac{q}{2} = (80 - P)\frac{1}{2} = (80 - P)^2 \frac{1}{2}$

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

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

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

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