HW15WK. 鄭又嘉

1. (A). $60-Q=30$ $E=15$, $P=45$ $CS=\frac{15\times45}{2}=112.5$. DWL=112.5

$\pi=45\times15-30\times15=225-PS$ $TS=225+112.5=337.5$.

(B). $60-Q=30 \rightarrow Q=30$. $CS=0$ DWL=0.

$\pi=\frac{30\cdot30}{2}=458$ $TS=0+450=450$

(C) $\pi=P(q_1)q_1+P(q_2)(q_2-q_1)-TC(q_2)$ CS=100.

$=(100-q_1)q_1+[(10-q_2)(q_2-q_1)-30q_2]$ TS=400.

$=-q_1^2-q_2^2+30q_2+q_1q_2$ DWL=450-400=50.

$=q_1=10$ $q_2=20$ $P_1=50$. $P_2=40$. $\pi=50\times10+40(20-10)$

$-600=300$.

(D).

$\pi=P(q_1)q_1+P(q_2)(q_2-q_1)+P(q_3)(q_3-q_2)-TC(q_3)$

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

$=q_1^2-q_2^2-q_3^2+30q_3+q_3q_2+q_2q_3$

$f'=-2q_1+q_2=0$ $-2q_2+q_1+q_3=0$ $-2q+30+q_2=0$

$\Rightarrow q_1=7.5$ $q_2=15$ $q_3=22.5$ $P_1=52.5$ $P_2=45$ $P_3=52.5$

$\pi=52.5\times7.5+45(15-7.5)+37.5(22.5\times13)-30\times22.5=337.5$

$CS=\frac{7.5^2}{2}+\frac{22.5^2}{2}+\frac{7.5^2}{2}=84.375$

$TS=84.375+337.5=421.875$

$DWL=450-421.875=28.125$