$q' = 4$

$\Delta CS = (10-8) \cdot 10 + \frac{1}{2}(10-8)(12-10) = 22$

$\Delta PS = ((10-4)(10) - (8-4)(8) = -28$

$\Delta GS = (8)(4) = 32$

$METB = .2$

$\Delta SS = 22 - 28 + 1.2 \cdot 32$

$P_0 = 10, \ Q_0 = 10, \ q' = 4, \ \exists^P = -2$

$-2 = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q} \ \rightarrow \ -2 = \frac{Q-10}{P-10} \cdot \frac{10}{10} \ \rightarrow \ -2(P-10) = Q-10 \ \rightarrow \ 30 = Q-2P$

$Q = 30 - 2P$

$P = 15 - .5Q$

residual demand $\rightarrow Q - q' \rightarrow Q^{res} = 30 - 2P - 4 = 26 - 2P$

$MR \rightarrow 2P = 26 - Q \ \rightarrow \ P = 13 - .5Q$

$MR = MC \ \rightarrow \ MR = P(1 + 1/\exists^P) = MC$

$\qquad\qquad 10(1 + 1/-2) = MC$

$\qquad\qquad 10(1/2) = MC$

$\qquad\qquad MC = 5$

$13 - Q = 5$

$\qquad Q = 8$

$P = 13 - \frac{1}{2}8 = 9$

Embodies Pareto efficiency