bo $\hat{p}$:

$P_f = 100 - Q_f$

$P_a = 40 - 0.5 Q_d$

$TC = 10 + 20Q$

$\rightarrow MC = 20$. $TR_p = P_f \times Q_f = 100 Q_f - Q_f^2$

$P_f(1 - \frac{1}{e_f}) = P_d(1 - \frac{1}{e_d}) \rightarrow e_f = -3$. $e_d = -1.5$

$Q_f = 40$. $P_f = 60$.

$TR_d = P_d \times Q_d = 40 Q_d - 0.5 Q_d^2$

$\rightarrow -Q_d + 40 = 20 \rightarrow Q_d = 20$. $P_d = 30$.

$\rightarrow \pi = TR - TC =$