

1.

$$\Pi_E = q_E(a - q_E - \bar{q}_I - b) - F \Rightarrow \max_{q_E}$$

$$q_E = \frac{a - \bar{q}_I - b}{2}$$

$$\Pi_E = \frac{a - \bar{q}_I - b}{2} \left( \frac{a - \bar{q}_I + b}{2} - b \right) - F = \frac{(a - \bar{q}_I - b)^2}{4} - F$$

To deter entrance incumbent will produce  $\bar{q}_I$ , such that:

$$\frac{(a - \bar{q}_I - b)^2}{4} \leq F$$

$$\bar{q}_I \geq a - b - 2\sqrt{F}$$

2. (a) In this case incumbent should overinvest as he/she will increase market share and increase profit while accommodating.
- (b) Incumbent should underinvest as investment worsens its strategic position (has positive impact on competitor's profit), so underinvesting while accommodating will make incumbent more competitive.