

Econ 30010
Intermediate Microeconomic Theory

Entry Deterrence Worksheet

Model Information

Inverse demand is $P = 200 - q_1 - q_2$

Cost of capacity needed per unit of output, $r = 49$

Cost of labor needed per unit of output, $w = 70$

F_1 = fixed cost for firm 1

F_2 = fixed cost for firm 2 incurred in firm 2 enters

Step 1. Derive the best responses for each firm assuming that firm 1 has no sunk capacity costs. Set up a graph with q_1 and q_2 plotted on each axis. Graph each firm's best response functions from this step using dashed lines. Calculate the Cournot equilibrium implied by these best response functions. Label this equilibrium as point A in your graph.

Step 2. Derive firm 1's best response assuming that only labor costs are variable. Add this function to your graph again using a dashed line. Calculate the Cournot equilibrium using firm 1's best response function from this step and firm 2's best response function from step 1. Label this equilibrium as point B in your graph.

Step 3. Explain how firm 1's choice of capacity allows it to induce any point on firm 2's best response between A and B. (Ignore the issue of whether or not firm 2's profits are non-negative for now.)

Step 4. Calculate the Stackelberg equilibrium given firm 2's best response function from step 1 when firm 1 is the leader. Label this equilibrium as point S on your graph. Calculate firm 1's profits at this equilibrium.

Step 5. What is the smallest amount of capacity firm 1 can choose that would cause firm 2 to stay out of the market? Explain. Calculate firm 1's profits assuming it invests in the minimal amount of capacity that will deter entry.

Step 6. Show that entry is strategically deterred if F_2 equals 100 and show that entry occurs if F_2 equals 25.