HW 6

1) Suppose that market demand can be represented as p = 100 - 2Q. There are 10 identical firms producing an undifferentiated product, each with the total cost function TC = 50 + q^2. Compare the competitive outcome with the cartel outcome. What is the individual firm's incentive to cheat on the cartel?

2) You are the manager of a firm in a new industry. You have gotten the jump on the only other producer in the market. You know what your competitor's cost function is, and it knows yours. Your products, although different to experts, are indistinguishable to the average consumer. Your marketing research team has provided you with the following market demand curve: $Q = 1,250 - .5P$. Your cost function is $C_A(Q_A) = 8Q_A$. Your competitor's cost function is $C_B(Q_B) = 6Q_B$. Your diligent effort will allow you to decide how much of your product to provide and allow you to place it on the market shortly before your competitor will be able to make its product available for sale. What output level will you choose, and what price will you charge? Explain.

3) The inverse demand curve for a Stackelberg duopoly is $P = 10,000 - 6Q$. The leader's cost structure is $C_L(Q_L) = 15Q_L$. The follower's cost structure is $C_F(Q_F) = 25Q_F$.
   a. Determine the reaction function for the follower.
   b. Determine the equilibrium output levels for both the leader and the follower.
   c. What are the profits for the leader? For the follower?