Econ 220

Homework 3

Due Apr 26th

1. Suppose that the (inverse) market demand curve for a new drug is given as follows: P=400-10Q and their marginal revenues is MR=400-20Q. Suppose also that there is a single supplier of the drug who faces a total cost curve as TC=10+10Q^2, and its marginal cost is MC=20Q.

   a. What are the monopolist's profit-maximizing output and price? (4 points)

   b. What is the equation for the total revenue curve. (2 points)

   c. What is the profit of the drug? (2 points)

   d. What is the output and price if the drug is under perfect competition market with the same demand and cost curves? (4 points)

   e. Calculate the deadweight loss of monopoly relative to the competitive outcome? (4 points)

2. Suppose that in the preceding problem, the government levies an excise tax of $40 per dose on the monopolist.

   a. What would happen to the monopolist output and price? (4 points)

   b. What is the change in consumer and producer surplus? (6 points)

   c. What is the governments tax revenue? (2 points)

   d. What is the change in the deadweight loss? (4 points)

3. Assume the following facts concerning the horizontal merger model developed by Williamson as discussed in class and shown above. Let inverse demand be P = 100-Q ; marginal cost pre-merger, MC$_1$=50 ; marginal cost post-merger, MC$_2$=$44; and pre-merger price, P$_1$= $50 . Assume that the post-merger price, P$_2$= $70, results from the market power created from the merger.

   a. Calculate the deadweight loss after the merger. (4 points)

   b. Calculate the gain to producer from the cost saving after the merger. (4 points)

c.   Should the merger be allowed? Why? (2 points)

4. A monopolist has two plants, plant 1 and 2. Plant 1 has marginal costs $MC_1(q_1)=q_1$ and plant 2 has marginal costs $MC_2(q_2)=2q_2$. The two plants supply a market where the demand curve is $P=1-2Q$, $Q=q_1+q_2$, and marginal revenue curve is $P=1-4Q$. What are the profit-maximizing values of q_1, q_2, Q, and price? (8 points)