Economics 100A
Fall 2001

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Instructor

Microeconomic Analysis
PROBLEM SET 9

Due at your discussion section meeting the week of November 30^{th}

1. A competitive industry has the following demand curve: P = 100 - Q, where Q is the total output produced. All the firms in this industry face the same cost curve: $C(q) = 10 + 4q + q^2$. Finally, there are 10 firms in this industry.

   a) Derive the supply curve for a typical firm in this industry.
   b) Derive the industry supply curve.
   c) Find the equilibrium price and quantity.
   d) How much profits is the typical firm making?
   e) Is this a short-run or long-run equilibrium? Explain.

2. A monopolist firm faces the following cost curve: $C(y) = Q^2 + 12$, where Q is the output produced. The demand for its product is given by P = 24 - Q.

a) Derive the MR for this firm.
b) Find the equilibrium price and quantity.
c) Find the profit level.
d) Calculate the Consumer Surplus, the Producer Surplus and the Deadweight Loss associated to the monopoly.

3. In our example in 2, how does charging the monopolist a specific tax of $8 per unit affect the monopoly optimum and the welfare of consumers, the monopoly and society (where society's welfare, or surplus, includes the tax revenue)? What is the incidence of the tax on consumers?

4. Still in our example in 2, how does imposing a tax on profits affect the monopoly optimum and the welfare of consumers, the monopoly and society?

5. A firm can practice first-degree price discrimination. The demand for its output is P = 100 - Q and the MC = 2Q.

a) Find the equilibrium price and quantity.
b) Find the profit level.
c) Calculate the Consumer Surplus, the Producer Surplus and the Deadweight Loss associated to price discrimination.

6. A monopoly sells in two countries, and resales between the countries are impossible. The demand curves in the two countries are:

$$P_1 = 100 - Q_1$$
$$P_2 = 120 - 2Q_2$$

The monopolist's marginal cost is \$30. Solve for the equilibrium price in each country. What is the equilibrium price and quantity if the monopolist decides to consider treat the two markets as one big market and charge a unique price? Compare the profits in these two situations.