

**Stern School of Business
New York University**

Microeconomics
B01.1303

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Fall 2011

Problem Set 5

1. The number of bottles of Chardonnay demanded per year in the United States is

$$D(p) = 1,000,000 - 60,000p,$$

where p is the price per bottle. The number of bottles supplied is

$$S(p) = 40,000p.$$

- (a) What is the equilibrium price and quantity.
- (b) Suppose that the government introduces a new tax such that the wine-maker must pay \$5.00 per bottle for every bottle sold. What is the new equilibrium price paid by the consumers? What is the equilibrium price received by the producers? What is the equilibrium quantity?
- (c) What is the size of the total surplus lost because of taxation?

2. In 1990, the town of Ham Harbor had a more-or-less free market in taxi services. Any respectable firm could provide taxi service as long as the drivers and cabs satisfied certain safety standards. Let us suppose that the constant marginal cost per trip of a taxi ride is \$5, and that the average taxi has a capacity of 20 trips per day. Let the demand function for taxi rides be given by $D(p) = 1200 - 20p$, where demand is measured in rides per day, and price is measured in dollars. Assume that the industry is perfectly competitive.

- (a) What is the competitive equilibrium price per ride? (Hint: At competitive equilibrium, price must equal marginal cost.) What is the equilibrium number of rides per day? How many taxi cabs will there be in equilibrium?
- (b) In 1990 the city council of Ham Harbor created a taxicab licensing board and issued a license to each of the existing cabs. The board stated that it would continue to adjust the taxi cab fares so that the demand for rides equals the supply of rides, but that they will issue no new license in the future. In 1995 costs had not changed, but the demand curve for taxi rides had become $D(p) = 1220 - 20p$. What was the equilibrium price of a ride in 1995?
- (c) What was the profit per ride in 1995, neglecting any costs associated with acquiring a taxicab license? What was the profit per taxicab license per day? If the taxi operated every day, what was the profit per taxicab license per year?
- (d) If there is free entry in the market for taxicab operators, what is the equilibrium rental price for a license for a year? Should the firms consider this a fixed or a variable cost?
- (e) Suppose that the commission decided in 1995 to issue enough new licenses to reduce the taxicab price per ride to \$5. How many more licenses would this take?