Quiz #4

with answers

1. John runs a car washing service with five potential customers. John has a marginal cost of \$8 per wash. The price that each customer will pay John to wash her car is listed below:

Customer	willingness to pay
Abby	\$30
Bianca	\$5
Chloe	\$20
Diana	\$15
Erin	\$25

a. Suppose that John must charge the same price to all of his customers (he is a single-price monopolist). What price does he charge and how many washes does he sell?If John sells 1 car wash, he charges \$30 and makes a profit of \$22. If he sells 2, he charges \$25 and earns \$34. 3, price is \$20, profit is \$36. 4, price is \$15, profit is \$28. 5, price is \$5, profit is negative. He maximizes his profit by sells 3 washes at a price of \$20.

b. Suppose now that it is possible for John to price discriminate. Now how many washes will John sell?Now he'll sell 4 washes, at prices ranging from \$15 to \$30.

2. Discuss the tradeoffs a government faces in deciding for how long patents should be valid.

Patents are good because they encourage research and development by promising an innovator higher than normal profits for some period in the future as a reward for his ingenuity. They are bad because for goods that have already been developed, patents create monopolies, which increase price and lead to deadweight loss.

3. Pazzo's, a restaurant/bar in Lexington, estimates that the demand function for its beer is given by $P = 10 - \frac{1}{10}Q$, where Q is thousands of beers consumed per month. Pazzo's has a constant marginal cost of beer of \$2.

Marginal revenue is $10 - \frac{1}{5}Q$. Setting this equal to marginal cost gives $Q = 40$, $P = \$6$.

b. **(5 points)** What is Pazzo's Lerner index?

Pazzo's Lerner index is $\frac{6-2}{6} = .67$.

4. An airline has two types of customers, tourists and business travelers. Tourists have demand function $p = 30 - q$, where q is the level of amenities (quality) for a purchased seat. Business travelers have demand $p = 40 - q$. Suppose that fraction $\frac{1}{10}$ of all travelers are business travelers, while $\frac{9}{10}$ are tourists.

The airline chooses a quality level q. For simplicity, assume that there is no cost to the airline of setting a given quality level, or to taking on an additional passenger.

a. Suppose the airline is constrained to only be able to set one quality level throughout its planes. What quality level should it set, and what price should it charge for a ticket?

If the airline decides it will only sell to business travelers, it will set $q = 40$ and charge a price of \$800, making a per-customer profit of \$80. If it decides to sell to both tourists and business travelers, it will set

quality equal to 30, and set the price of a ticket equal to $450, earning a per-customer profit of $450. Clearly, the latter is better.

b. Fact: if the airline has both a first class and a coach section on the plane, the profit-maximizing price for a coach ticket will be lower than the price you solved for in part a. Explain the economic intuition behind this fact. Airlines set a low quality in coach not to annoy the people who sit in coach, but to annoy annoy the people who don't sit in coach, namely the first class customers. The worse coach is, the more a first class customer is willing to pay for a first class ticket, as the alternative is worse.