

Introduction to Industrial Organization Fall 2014 Homework 2

1. If the demand curve is $Q(P) = 10 - P$ and the marginal cost is constant at 4, what is the profit maximizing monopoly price and output. At this level of output what is the elasticity of demand? By how much is output distorted relative to the surplus maximizing level?
2. Repeat question #1 with $Q(P) = P^2$.
3. Reconsider the dominant firm model of Microsoft presented in class. Explain why Microsoft would benefit if the fixed costs of entry increase.
4. Suppose a firm gives coupons to selected consumers that entitle them to price discounts. Why might the firm limit the number of coupons that a customer can use on a single purchase?
5. First time subscribers to the Economist (and many other magazines) pay a lower rate than repeat subscribers. Is this price discrimination? Of what type?
6. Supermarkets frequently issue coupons that entitle consumers to a discount in selected products. Is this a promotional strategy, or simply a form of price discrimination? Empirical evidence suggests that paper towels are significantly more expensive in markets offering coupons than in markets without coupons. Is this consistent with your interpretation?
7. A market consists of two population segments, A and B. An individual in segment A has demand for your product given by $Q(P) = 50 - P$. An individual in segment B has demand given by $Q(P) = 120 - 2P$. Segment A has 1000 people, segment B has 1200. Total costs of production are given by $C(Q) = 5000 + 20Q$.
 - a. What is total market demand for your product?
 - b. Assume that you must charge the same price to both segments. What is the profit maximizing price? What are your profits?
 - c. Assume that you are able to engage in 3rd degree price discrimination. What prices do you charge the A and B segments? What are total profits?
 - d. Suppose now you are only able to engage in 2nd degree price discrimination. Provide some intuition for why you expect profits to fall relative to "c".
8. Reconsider the model of Starbucks and 2nd degree price discrimination discussed in class. Assume that $p_H = 1.9$, $p_L = 1.6$, and $c = 1.05$.

- a. Starbucks wants to select the sizes and prices of a small cup of coffee that maximize profits. What are these optimal sizes and prices? If Starbucks was prohibited from engaging in second degree price discrimination, and could only offer one size cup of coffee, what size would it be and how much would it cost? Assume that Starbucks designs this cup of coffee so that it sells to H and L consumers.
 - b. Suppose now a new coffee shop, "Inferior Coffee", opens across the street. They offer an 8 ounce cup of coffee for \$1. Assume that H consumers will never purchase from Inferior Coffee, no matter what price they charge. L consumers will purchase from Inferior the 8 ounce, \$1 cup offers more utility than Starbucks small. Solve for Starbucks profit maximizing menu.
9. Assume that Apple is rethinking its pricing policy on iTunes' music downloads. It is considering policies where consumers pay a monthly fee (P) and a cost per song (c). Consumers receive utility, $u(q) = \alpha - \beta p$ from downloading q songs under a given pricing plan. It is a measure of how much consumers value music.
- a. Solve an arbitrary consumer's utility maximization problem. For an arbitrary c , how much music will a consumer download. Your answer should be in terms of α and c .
 - b. Assume $\alpha = 10$, there are 100 consumers, and $P = 0$. What is the profit maximizing price per song (c) if Apple's total costs are given by $TC(Q) = 0.05Q$, where Q is the total number of downloads?
 - c. Continue to assume that $\alpha = 10$. What is Apple's profit maximizing two part tariff?
 - d. Compare consumer surplus, profits, and total surplus under parts "b" and "c".