

Instructions: (1) Put **your name** on the exam. (2) Put your **TA's** name and section on the exam. (3) Taking account of the points each question is worth, allocate your time appropriately (DO NOT spend excessive time on the short-answer questions). (4) To get full credit on answers, you must be clear, be rigorous, and thoroughly explain your answer in words. You should use a graph for most problems, the graph should be clearly LABELLED, and you must interpret the graph in words. Be succinct. (5) You cannot get credit unless you write something down: Give partial answers if you cannot give complete answers. (6) Answer *only* the number of questions specified — You will *not* get extra credit for answering more than the specified number. (If an extra question is answered, the TAs will ignore the last one.) Note: All problems are directly or indirectly based on solved problems from class or homework except number 6.

Short Questions: Answer only 2 of the following 3 questions (each is worth 15 points)

1. There are only two souvenir vendors at the Super Bowl. They choose their quantities simultaneously. They will not sell in the same market again. Are they likely to collude or not? Why?
2. Does a *monopoly* have a *supply curve*? Why or why not?
3. A monopoly with a constant marginal cost m faces two groups of customers. One group's inverse demand curve is $p_1 = 13 - 2Q_1$, while the other's is $p_2 = 3 - Q_2$. Suppose that the conditions necessary for the firm to successfully price discriminate hold. The monopoly charges each member of a group the same price. If $m = 1$, the monopoly sets what price and sells how many units to each group?

Medium Question: Answer only 1 of the following 2 questions (each is worth 20 points)

4. The government provides a *price support* for a crop at \bar{p} . (Consumers buy as much as they want and the government guarantees it will buy as much as necessary so that firms can sell as much as they want at \bar{p} . The government destroys all that it purchases.)
 - (a) Show the market price and quantity, deadweight loss, and total welfare. (8 points)
 - (b) Bad weather causes the market supply curve to shift to the left so that it is parallel to the original one. What is the effect of the supply shock on market price and quantity, deadweight loss, and total welfare if the government's price support is still binding? (12 points)
5. The government gives a lump-sum *subsidy* of $\$L$ to every firm that operates in a competitive market with identical firms and free entry. Each firm has a U-shaped average cost curve.
 - (a) How does this subsidy affect the market price, market quantity, output per firm, and number of firms in the long run? (12)
 - (b) By how much does total welfare rise or fall? (8)

Long Question: Answer 2 of the following 3 questions (each is worth 25 points)

6. A monopoly sells chocolate. It faces a downward sloping demand curve. The firm has two plants where it manufactures chocolate. Both plants produce an identical product (so each plant's product is sold at the same price). The marginal cost curves at the two plants, MC_1 and MC_2 , are upward sloping (MC_1 is not necessarily the same as MC_2). Use graphs to show how the firm chooses its profit maximizing production and how much the firm produces at each plant.
7. A monopoly publisher of a book pays its author a royalty equal to a fraction α times the revenues from the sale of the book.
 - (a) Use graphs to show the quantity, Q_a , that the author wants the publisher to sell. (10)
 - (b) Use graphs to show the quantity, Q_p , that the publisher sells. (10)
 - (c) Does the sum of the publisher's profit and the author's royalty equal the monopoly profit that the publisher would make if it did not have to pay the author a royalty? Why or why not? (5)
8. Initially, electricity is sold in California and in other states at a single price. Now suppose that California restricts the quantity of electricity its citizens can buy. Show what happens to the price of electricity and the quantities sold in California and elsewhere.