EE211 Section 1
Homework 7 Answers
Explain your answers with graph in details.

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Chapter 16
Problems and Applications # 1, 4 and 5

1. The following table shows revenue, costs, and profits:

Price	Quantity	Total Revenue	Marginal Revenue	Total Cost	Profit
$100	0	$0	----	$2,000,000	$-2,000,000
90	100,000	9,000,000	$90	3,000,000	6,000,000
80	200,000	16,000,000	70	4,000,000	12,000,000
70	300,000	21,000,000	50	5,000,000	16,000,000
60	400,000	24,000,000	30	6,000,000	18,000,000
50	500,000	25,000,000	10	7,000,000	18,000,000
40	600,000	24,000,000	-10	8,000,000	16,000,000
30	700,000	21,000,000	-30	9,000,000	12,000,000
20	800,000	16,000,000	-50	10,000,000	6,000,000
10	900,000	9,000,000	-70	11,000,000	-2,000,000
0	1,000,000	0	-90	12,000,000	-12,000,000

a. A family profit-maximizing publisher would choose a quantity of 400,000 at a price of $60 or a quantity of 500,000 at a price of $50; both combinations would lead to profits of $18 million.

b. Marginal revenue is less than price. Price falls when quantity rises because the demand curve slopes downward, but marginal revenue falls even more than price because the firm loses revenue on all the units of the good sold when it lowers the price.

c. Figure A shows the marginal-revenue, marginal-cost, and demand curves. The marginal-revenue and marginal-cost curves cross between quantities of 400,000 and 500,000. This signifies that the firm maximizes profits in that region.

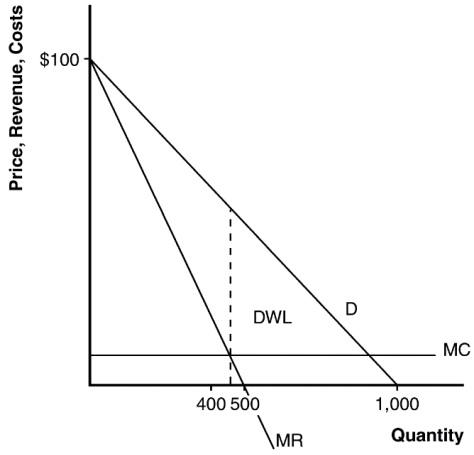

Figure A

d. The area of deadweight loss is marked "DWL" in the figure. Deadweight loss means that the total surplus in the economy is less than it would be if the market were competitive, because the monopolist produces less than the socially efficient level of output.

e. If the author were paid $3 million instead of $2 million, the publisher would not change the price, because there would be no change in marginal cost or marginal revenue. The only thing that would be affected would be the firm's profit, which would fall.

f. To maximize economic efficiency, the publisher would set the price at $10 per book, because that is the marginal cost of the book. At that price, the publisher would have negative profits equal to the amount paid to the author.

4.

a. The table below shows total revenue and marginal revenue for the bridge. The profit-maximizing price will occur at the quantity at which marginal revenue equals marginal cost. In this case, marginal cost equals zero, so the profit-maximizing quantity occurs where marginal revenue equals 0. This occurs at a price of $4 and quantity of 400,000 crossings. The efficient level of output is 800,000 crossings, because that is where price is equal to marginal cost. The profit-maximizing quantity is lower than the efficient quantity because the firm is a monopolist.

Price	Quantity (in Thousands)	Total Revenue (in Thousands)	Marginal Revenue
$8	0	$0	----
7	100	700	$7
6	200	1,200	5
5	300	1,500	3
4	400	1,600	1
3	500	1,500	-1
2	600	1,200	-3
1	700	700	-5
0	800	0	-7

b. The company should not build the bridge because its profits are negative. The most revenue it can earn is $1,600,000 and the cost is $2,000,000, so it would lose $400,000.

c. If the government were to build the bridge, it should set price equal to marginal cost to be efficient. Since marginal cost is zero, the government should not charge people to use the bridge.

d. Yes, the government should build the bridge, because it would increase society's total surplus. As shown in Figure B, total surplus has area ½ × 8 × 800,000 = $3,200,000, which exceeds the cost of building the bridge.

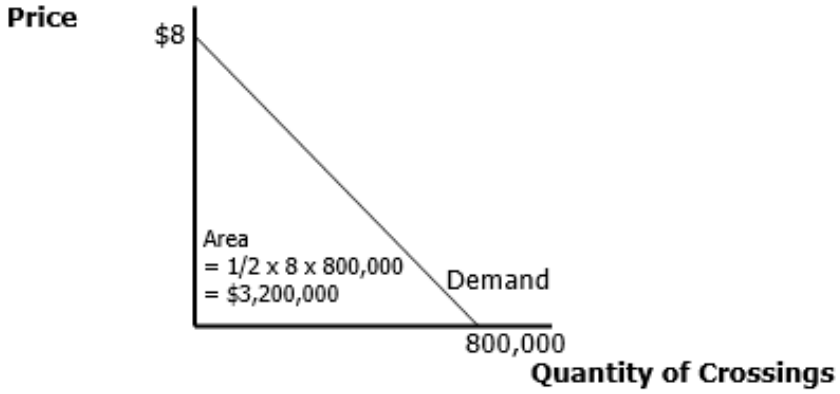

Figure B

5.

a.

A monopolist always produces a quantity at which demand is elastic. If the firm produced a quantity for which demand was inelastic and the firm raised its price, quantity would fall by a smaller percentage than the rise in price, so revenue would increase. Because costs would decrease at a lower quantity, the firm would have higher revenue and lower costs, so profit would be higher. Thus the firm should keep raising its price until profits are maximized, which must happen on an elastic portion of the demand curve.

b.

As Figure C shows, another way to see this is to note that on an inelastic portion of the demand curve, marginal revenue is negative. Increasing quantity requires a greater percentage reduction in price, so revenue declines. Because a firm maximizes profit where marginal cost equals marginal revenue, and marginal cost is never negative, the profit-maximizing quantity can never occur where marginal revenue is negative. Thus, it can never be on the inelastic portion of the demand curve. Total revenue is maximized where marginal revenue is equal to zero (Q_{TR} on Figure C).

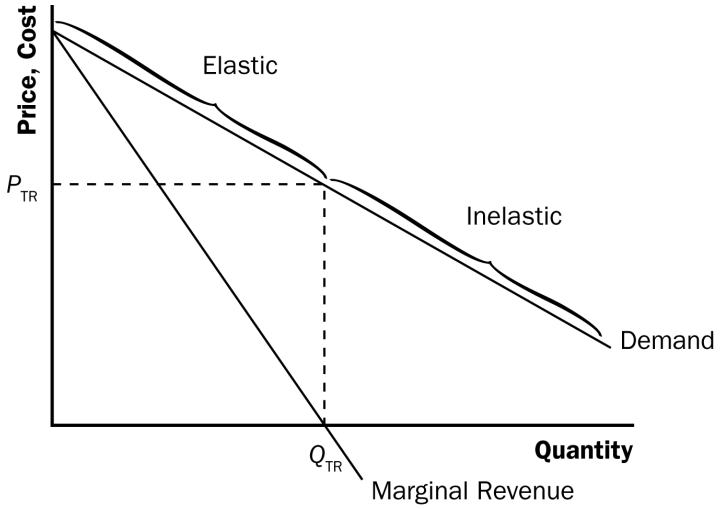

Figure C