

1. Mankiw Ch15. Question10. a,b,c (page 326)

QUESTION:

Based on market research, a film production company in Ectenia obtains the following information about the demand and production costs of its new DVD:

$$\text{Demand: } P = 1,000 - 10Q$$

$$\text{Total Revenue: } TR = 1,000Q - 10Q^2$$

$$\text{Marginal Revenue: } MR = 1,000 - 20Q$$

$$\text{Marginal Cost: } MC = 100 + 10Q$$

where Q indicates the number of copies sold and P is the price in Ectenian dollars.

- Find the price and quantity that maximize the company's profit.
- Find the price and quantity that would maximize social welfare.
- Calculate the deadweight loss from monopoly.

ANSWER:

- a. $MR=MC$ (to maximize profit)

$$1000 - 20Q = 100 + 10Q$$

$$30Q = 900$$

$$Q = 30$$

$$P = 1000 - 10Q = 700$$

- b. $P = MC$

$$1000 - 10Q = 100 + 10Q$$

$$20Q = 900$$

$$Q = 45$$

$$P = 1000 - 10Q = 550$$

- c. $MC = 100 + 10 \cdot 30 = 400$

$$DWL = (1/2) \cdot (45 - 30) \cdot (700 - 400) = \$2250$$

2. The Monopolist's profit-maximization

QUESTION:

Use the accompanying total revenue schedule of Emerald, Inc., a monopoly producer of 10-carat emeralds, to calculate the answers to parts a–d. Then answer part e.

- The demand schedule (i.e., the relationship b/w P & Q and $P=TR/Q$)

- b. The marginal revenue schedule
- c. The quantity effect component of marginal revenue per output level
- d. The price effect component of marginal revenue per output level
- e. What additional information is needed to determine Emerald, Inc.'s profit-maximizing output?

ANSWER:

Q.	TR.	a(P).	b(MR).	c(Quantity Effect).	d(Price Effect)
1	100		100	100	100
	0				
2	186		93	86	93
	-7				
3	252		84	66	84
	-18				
4	280		70	28	70
	-42				
5	250		50	-30	50
	-80				

- (a) The quantity of production is given so finding price will give demand schedule so $P = TR/Q$
- (b) Marginal revenue = $(TR_2 - TR_1)$
- (c) Quantity effect shows the increase in total revenue TR due to change in quantity i.e. price of the nth good sold.
- (d) Price effects shows the change in TR due reduction in price on total quantity sold due to sale of one additional unit. $-(P_2 - P_1) * Q$
- e. Still need the marginal cost curve of the firm

3. Mankiw Ch15. Question 11 (page 326-327)

QUESTION:

Many schemes for price discriminating involve some cost. For example, discount coupons take up the time and resources of both the buyer and the seller. This question considers the implications of costly price discrimination. To keep things simple, let's assume that our monopolist's production costs are simply proportional to output so that average total cost and marginal cost are constant and equal to each other.

- a. Draw the cost, demand, and marginal-revenue curves for the monopolist. Show the price the monopolist would charge without price discrimination.

b. In your diagram, mark the area equal to the monopolist's profit and call it X. Mark the area equal to consumer surplus and call it Y. Mark the area equal to the deadweight loss and call it Z.

c. Now suppose that the monopolist can perfectly price discriminate. What is the monopolist's profit?

(Give your answer in terms of X, Y, and Z.)

d. What is the change in the monopolist's profit from price discrimination? What is the change in total

surplus from price discrimination? Which change is larger? Explain. (Give your answer in terms of X, Y, and Z.)

e. Now suppose that there is some cost of price discrimination. To model this cost, let's assume that

the monopolist has to pay a fixed cost C to price discriminate. How would a monopolist make the

decision whether to pay this fixed cost? (Give your answer in terms of X, Y, Z, and C.)

f. How would a benevolent social planner, who cares about total surplus, decide whether the monopolist

should price discriminate? (Give your answer in terms of X, Y, Z, and C.)

g. Compare your answers to parts (e) and (f). How does the monopolist's incentive to price discriminate

differ from the social planner's? Is it possible that the monopolist will price discriminate even though doing so is not socially desirable?

ANSWER: (REFER TO DIAGRAM PROVIDED)

a. Price = P₂

b. Refer to diagram

c. Profit = X + y + z

d. Change in profit = Y + Z

Change in total surplus = Z

Change in Profit > Change in total surplus

e. Decide by this equation:

$$Y + Z > C$$

f. Is $Z > C$

g. Yes, it is possible that the monopolist will price discriminate because the monopolist has a greater incentive to price discriminate than the social planner would allow.