Marginal Revenue for an Imperfect Competitor

Marginal Revenue Pulls Average Revenue Toward It

Marginal revenue and price are not the same thing, but price and average revenue are the same concept with most applications of demand. With some control over price and output, imperfectly competitive firms realize that the additional revenue garnered from selling extra output changes at a different rate than the price of the good. Average revenue, defined as total revenue / output, falls as the price-searching firm increases output. Marginal revenue, defined as Δtotal revenue / Δoutput, falls even faster than average revenue as output increases.

Assuming the monopoly firm charges every buyer the same price, marginal revenue falls approximately twice as fast as price when the business offers additional units into the product market.

Look at the market-demand schedule in Figure 32.1. Buyer interest begins at a price of $13.50 when no units are demanded. With a $1.50 drop in price to $12.00, 100 units are demanded. Total revenue is $1,200 at the $12.00 price per unit; marginal revenue matches price on the first sales block of 100 units. When price falls to $10.50 per unit, no person pays a price below $10.50, yet marginal revenue is $9.00. What causes this result?

This monopoly firm, knowing that the market demand schedule is also the firm's demand schedule, recognizes that selling more units of product requires the same price for all buyers. It gives up the original price of $12.00 per unit and adopts $10.50. Total sales are 200 at a price of $10.50 per unit, yet the firm had to lower the price $1.50 on the first block of 100 units to generate the additional block of 100 units.

Thinking on the margin, the monopolist recognizes that lower prices for the first sales block caused the surrender of $150 in revenue on the first 100 demanded to gain the next sales block of 100 units. So the $1,050 gain in revenue from the last 100 sales requires a $150 deduction in revenue from the first sales block of 100 units. The last sales block, of an additional 100 units, brings $900 net revenue, all blocks considered.

Now it is time to fill in the missing data and then plot the data as a graph on Figure 32.2.

Fill in the blanks on the table, and plot both the demand curve and the marginal revenue curve on Figure 32.2. Label the demand curve D and the marginal revenue curve MR. (**Note:** Plot the marginal revenue data midway between the quantity levels shown in the second column of the table.) Then answer the following two questions.

1. Notice that the price points show $1.50 changes. By how much does marginal revenue change for each change in price points? _____

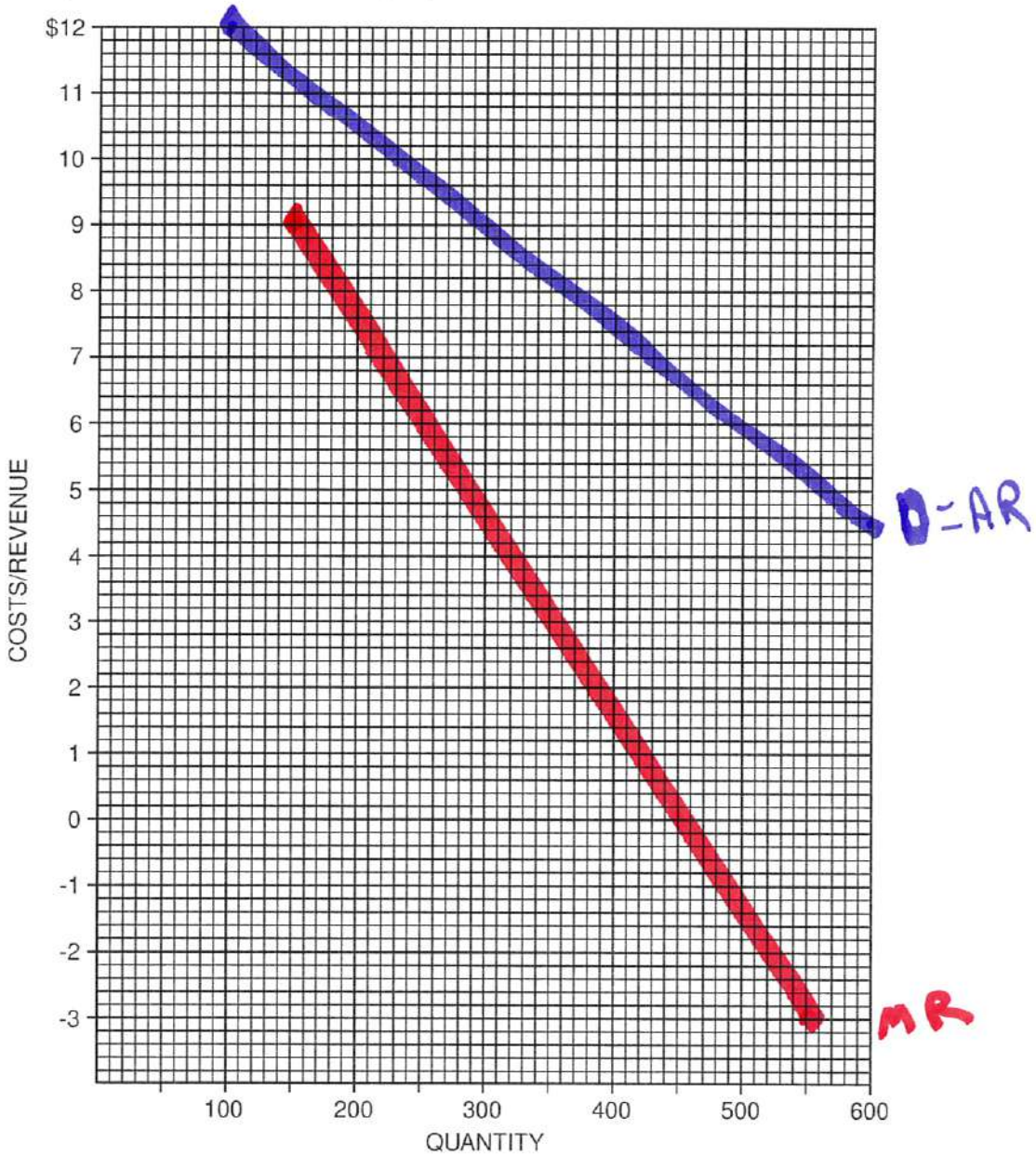
2. For a firm large enough to see the whole demand curve, marginal revenue is positive when the demand curve is price elastic. Marginal revenue becomes negative when the segment of the demand curve becomes price inelastic. Will a single-price monopoly ever operate on the inelastic portion of its demand curve? Why or why not?

Figure 32.1

Average Revenue and Marginal Revenue for a Monopoly

Price (Average Revenue)	Quantity Demanded (Q)	Total Revenue (R)	Change in Total Revenue (ΔR)	Marginal Revenue (ΔR / ΔQ)
$13.50	0	$0		
12.00	100	1,200	$1,200	$12.00
10.50	200	2,100	900	9.00
9.00	300	2,700		
7.50	400			
6.00	500	3,000	0	0
4.50	600	2,700	–300	–3.00

Figure 32.2
Plotting Average Revenue and Marginal Revenue for a Monopoly



Pure Monopoly

Like other producers in a market economy, a pure monopolist tries to maximize profit by producing at an output where marginal cost (MC) equals marginal revenue (MR). For a firm in a competitive market, price and marginal revenue are the same; but for a monopolist, who "sees" the entire market demand curve and who must charge all buyers the same price, marginal revenue is below price. This activity considers the monopolist's choice of output level.

Part A

1. Figure 33.1 presents a summary of the relevant cost and revenue data facing a pure monopoly firm. Fill in the blanks on the table.

2. Plot the data for MC, MR, ATC (average total cost) and AR (average revenue) on Figure 33.2. (**Note:** For this problem plot MR and MC on the number.)

Figure 33.1
Pure Monopoly: Cost and Revenue Data

Quantity of Output	Total Cost	Marginal Cost	Average Total Cost	Total Revenue	Marginal Revenue	Average Revenue (Price)
0	$0	—	$0	$0	—	$0
1	900	$900	900	1,200	$1,200	1,200
2	1,600	700	800	2,100	900	1,050
3	2,100	*500*	700	2,700	*600*	900
4	2,400	*300*	*600*	3,000	300	*750*
5	3,000	600	*600*	3,000	*0*	*600*
6	4,200	1,200	*700*	2,700	–300	*450*

After you have completed the table and the graph, answer these questions by filling in the blanks and shading in the area indicated in Question 7. In this problem, plot the MC and MR data at each quantity rather than at the midpoint. This is just for simplicity and does not change the fundamental analysis.

3. A profit-maximizing monopolist would produce an output of _____ units.

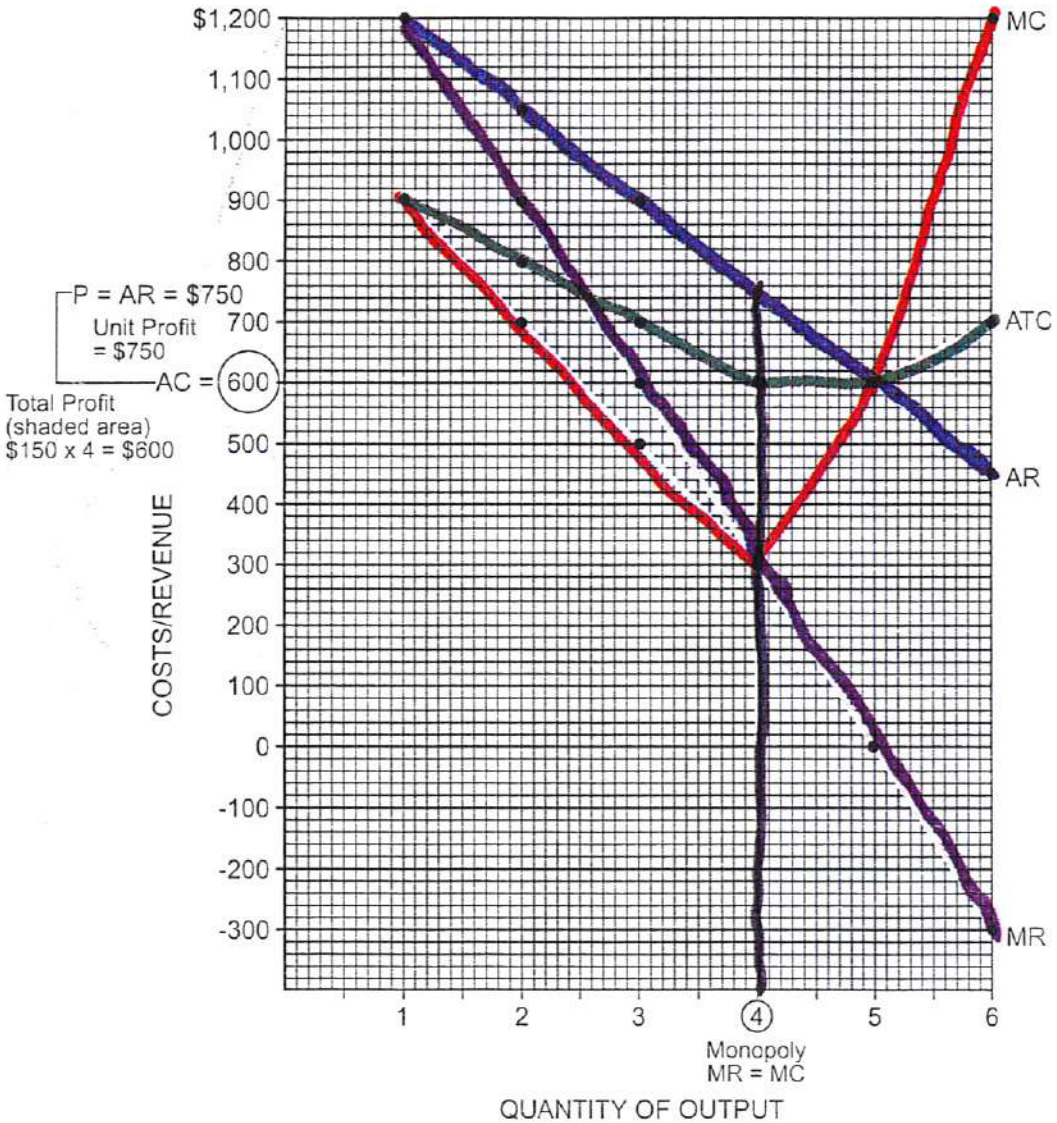
4. At this level of output, MC is _____ per unit and MR is _____ per unit.

5. At this level of output, ATC is _____ per unit, and AR (price) is _____ per unit.

6. This gives the monopolist an economic profit of _____ per unit for a total economic profit of _____.

7. Shade in the area on the graph that represents the total economic profit figure indicated in your answer to Question 6.

Figure 33.2
Profit-Maximizing Equilibrium for a Monopoly

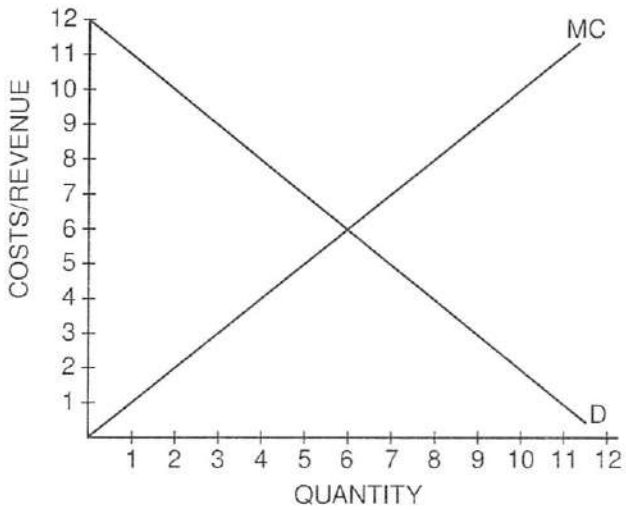


Monopoly Pricing

Part A
Equilibrium for the Perfectly Competitive Industry

Consider Figure 34.1. Assume that the market described by the figure is perfectly competitive, and MC represents the horizontal summation of marginal cost curves and, therefore, the market supply curve. Use Figure 34.1 to answer the following questions.

Figure 34.1
Perfect Competition



1. What quantity of output will be produced? _____

2. What price will the market establish? _____

3. Calculate the amount of the consumer surplus. Darkly shade the area of consumer surplus.

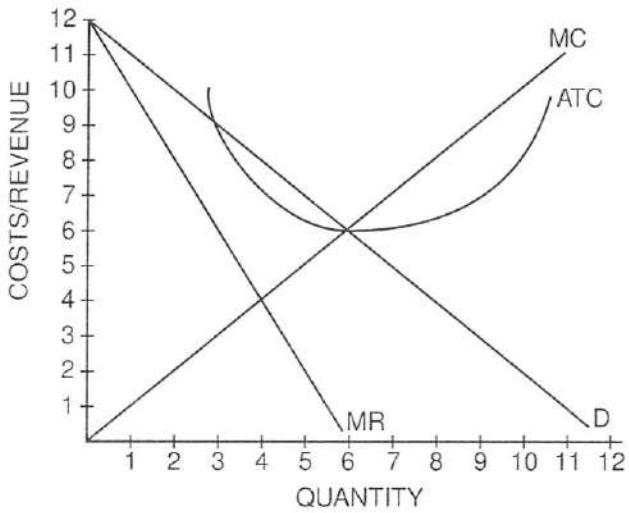
4. Calculate the amount of the producer surplus. Lightly shade the area of producer surplus.

Activity written by Robert Graham, Hanover College, Hanover, Ind.

Part B
Equilibrium for the Monopolist

Now consider the same demand and cost curves, but assume the market is a monopoly. Therefore, MR represents the monopolist's marginal revenue curve and MC represents the monopolist's marginal cost curve. Using Figure 34.2, answer the following questions.

Figure 34.2
Monopoly



5. What quantity of output will be produced? _____ Why?

6. What price will the monopolist establish? _____ Why?

7. Calculate the amount of the consumer surplus. Darkly shade the area of consumer surplus.

8. Calculate the amount of the producer surplus. Lightly shade the area of producer surplus.

9. How does the price and output of a monopolist differ from that of the perfectly competitive industry?

10. What portion of the consumer surplus in the competitive situation was transferred to the firm in the monopoly situation?

11. How does a monopoly affect consumer surplus? Is this good or bad?