following this rule for profit maximization, competitive firms and monopolies are alike. But there is also an important difference between these types of firms: The marginal revenue of a competitive firm equals its price, whereas the marginal revenue of a monopoly is less than its price. That is,

For a competitive firm: \( P = MR = MC \).
For a monopoly firm: \( P > MR = MC \).

The equality of marginal revenue and marginal cost at the profit-maximizing quantity is the same for both types of firms. What differs is the relationship of the price to marginal revenue and marginal cost.

How does the monopoly find the profit-maximizing price for its product? The demand curve answers this question because the demand curve relates the amount that customers are willing to pay to the quantity sold. Thus, after the monopoly firm chooses the quantity of output that equates marginal revenue and marginal cost, it uses the demand curve to find the highest price it can charge and sell that quantity. In Figure 4, the profit-maximizing price is found at point B.

We can now see a key difference between markets with competitive firms and markets with a monopoly firm: In competitive markets, price equals marginal cost. In monopolized markets, price exceeds marginal cost. As we will see in a moment, this finding is crucial to understanding the social cost of monopoly.

**A Monopoly’s Profit**

How much profit does a monopoly make? To see a monopoly firm’s profit in a graph, recall that profit equals total revenue (\( TR \)) minus total costs (\( TC \)):

\[
\text{Profit} = TR - TC.
\]

**FYI**

Why a Monopoly Does Not Have a Supply Curve

You may have noticed that we have analyzed the price in a monopoly market using the market demand curve and the firm’s cost curves. We have not made any mention of the market supply curve. By contrast, when we analyzed prices in competitive markets beginning in Chapter 4, the two most important words were always supply and demand.

What happened to the supply curve? Although monopoly firms make decisions about what quantity to supply (in the way described in this chapter), a monopoly does not have a supply curve. A supply curve tells us the quantity that firms choose to supply at any given price. This concept makes sense when we are analyzing competitive firms, which are price takers. But a monopoly firm is a price maker, not a price taker. It is not meaningful to ask what such a firm would produce at any price because the firm sets the price at the same time it chooses the quantity to supply.

Indeed, the monopolist’s decision about how much to supply is impossible to separate from the demand curve it faces. The shape of the demand curve determines the shape of the marginal-revenue curve, which in turn determines the monopolist’s profit-maximizing quantity. In a competitive market, supply decisions can be analyzed without knowing the demand curve, but that is not true in a monopoly market. Therefore, we never talk about a monopoly’s supply curve.
We can rewrite this as

\[ \text{Profit} = \left( \frac{TR}{Q} - \frac{TC}{Q} \right) \times Q. \]

\( TR/Q \) is average revenue, which equals the price, \( P \), and \( TC/Q \) is average total cost, \( ATC \). Therefore,

\[ \text{Profit} = (P - ATC) \times Q. \]

This equation for profit (which also holds for competitive firms) allows us to measure the monopolist’s profit in our graph.

Consider the shaded box in Figure 5. The height of the box (the segment BC) is price minus average total cost, \( P - ATC \), which is the profit on the typical unit sold. The width of the box (the segment DC) is the quantity sold, \( Q_{\text{MAX}} \). Therefore, the area of this box is the monopoly firm’s total profit.

**CASE STUDY**

**MONOPOLY DRUGS VERSUS GENERIC DRUGS**

According to our analysis, prices are determined differently in monopolized markets and competitive markets. A natural place to test this theory is the market for pharmaceutical drugs because this market takes on both market structures. When a firm discovers a new drug, patent laws give the firm a monopoly on the sale of that drug. But eventually, the firm’s patent runs out, and any company can make and sell the drug. At that time, the market switches from being monopolistic to being competitive.

What should happen to the price of a drug when the patent runs out? Figure 6 shows the market for a typical drug. In this figure, the marginal cost of producing...