

# Economics

## MONOPOLY



# Ch.9 OUTLINE

9.1: How  
Monopolies Form:  
Barriers to Entry

9.2: How a Profit-  
Maximizing  
Monopoly Chooses  
Output and Price

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# Political Power from a Cotton Monopoly

- In the year 1860, the United States, specifically the Southern states, had a near monopoly in the cotton supplied to Great Britain.
- These states attempted to leverage this economic power into political power—trying to sway Great Britain to formally recognize the Confederate States of America.

(Credit: modification of "cotton!" by ashley/Flickr, CC BY 2.0)



# 9.1 How Monopolies Form: Barriers to Entry

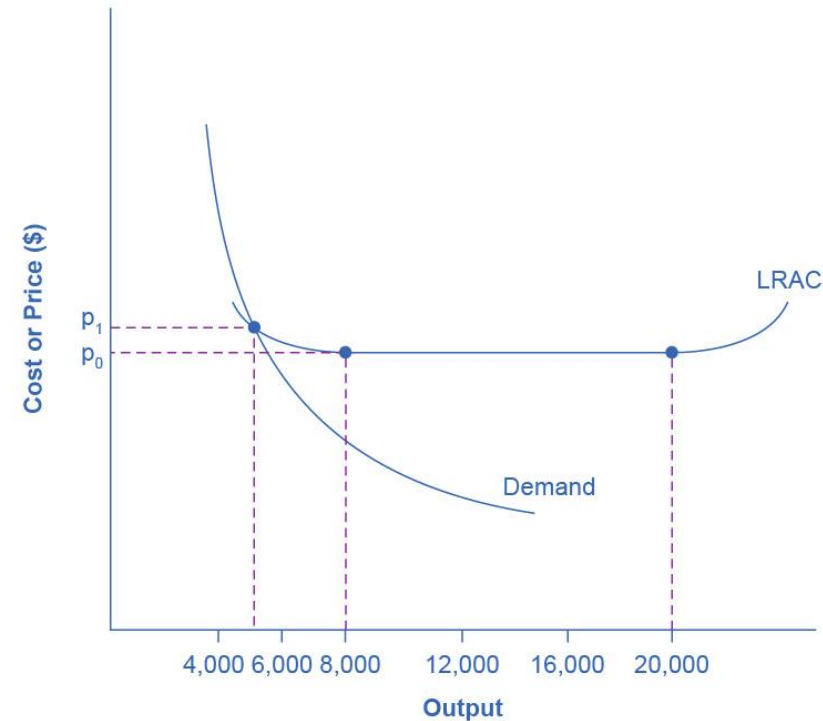
- **Monopoly** - one firm produces all of the output in a market
- **Barriers to entry** - are the legal, technological, or market forces that discourage or prevent potential competitors from entering a market.
- **Natural monopoly** - where the barriers to entry are something other than legal prohibition.
- **Legal monopoly** - laws prohibit (or severely limit) competition.

# Natural Monopoly

- Natural monopolies can arise:
  - in industries where the marginal cost of adding an additional customer is very low, once the fixed costs of the overall system are in place.
  - in smaller local markets for products that are difficult to transport.
  - when a company has control of a scarce physical resource.
- Discussion Question: What are some examples of natural monopolies?

# Economies of Scale and Natural Monopoly

- In this market, the demand curve intersects the long-run average cost (LRAC) curve at its downward-sloping part.
- A natural monopoly occurs when the quantity demanded is less than the minimum quantity it takes to be at the bottom of the long-run average cost curve.



# Legal Monopoly

- The government creates barriers to entry by prohibiting or limiting competition.
- Examples of legal monopolies:
  - U.S. Postal Service
  - Utilities - electric, water, garbage, etc.

# Promoting Innovation

- **Patent** - gives the inventor the exclusive legal right to make, use, or sell the invention for a limited time.
- **Trademark** - an identifying symbol or name for a particular good.
- **Copyright** - a form of legal protection to prevent copying, for commercial purposes, original works of authorship, including books and music.
- **Trade secrets** - methods of production kept secret by the producing firm



# Promoting Innovation

- **Intellectual property** - the body of law including patents, trademarks, copyrights, and trade secret law that protect the right of inventors to produce and sell their inventions.
  - Implies ownership over an idea, concept, or image, not a physical piece of property.
- **Deregulation** - removing government controls over setting prices and quantities in certain industries.

Barrier to Entry	Government Role?	Example
Natural monopoly	Government often responds with regulation (or ownership)	Water and electric companies
Control of a physical resource	No	DeBeers for diamonds
Legal monopoly	Yes	Post office, past regulation of airlines and trucking
Patent, trademark, and copyright	Yes, through protection of intellectual property	New drugs or software
Intimidating potential competitors	Somewhat	Predatory pricing; well-known brand names

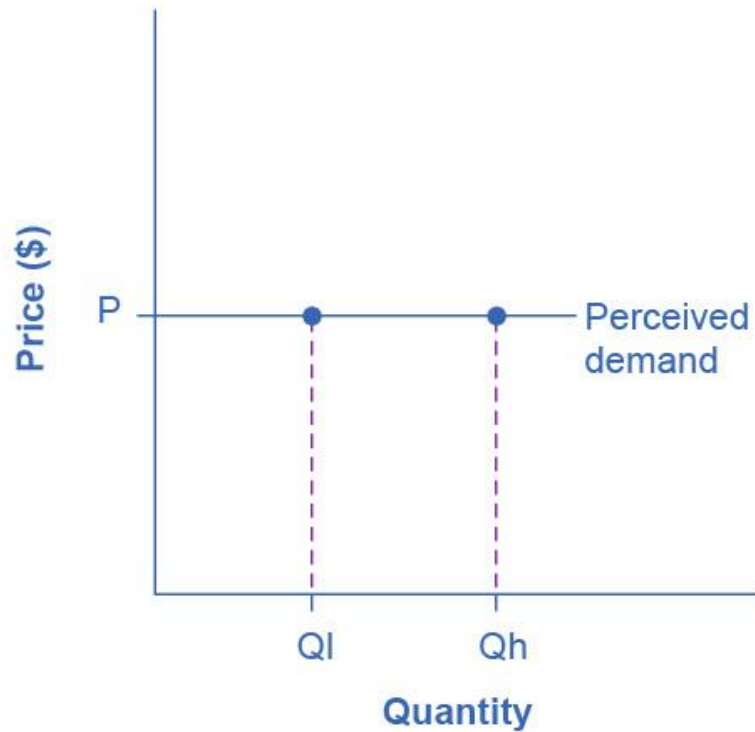
# Summing Up Barriers to Entry

# Intimidating Potential Competition

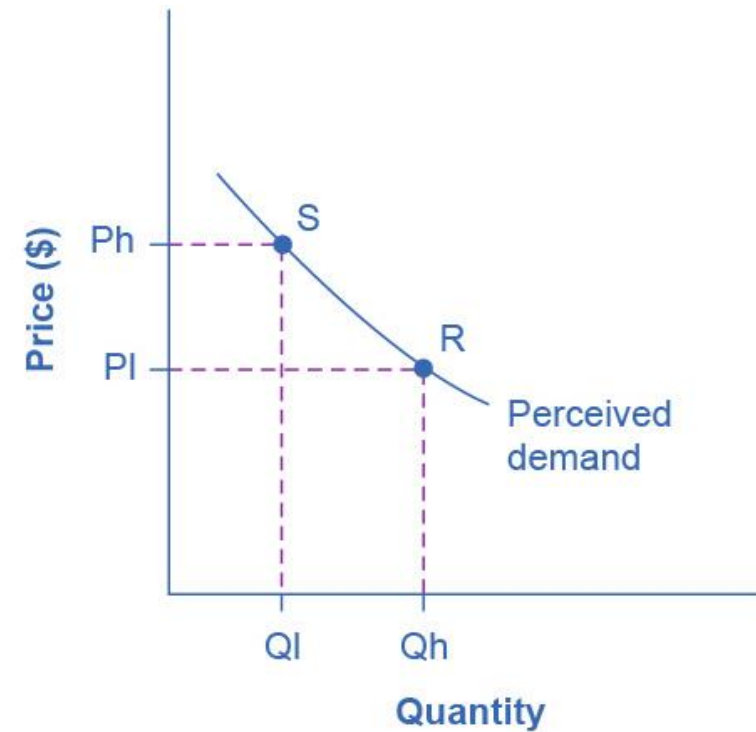
- **Predatory pricing** - a firm uses the threat of sharp price cuts to discourage competition.
  - A violation of U.S. antitrust law, but it is difficult to prove.

## 9.2 How a Profit-Maximizing Monopoly Chooses Output and Price

- A monopolist can charge *any* price for its product, but the demand for the firm's product constrains the price.
- Because the monopolist is the only firm in the market, its demand curve is the same as the market demand curve.



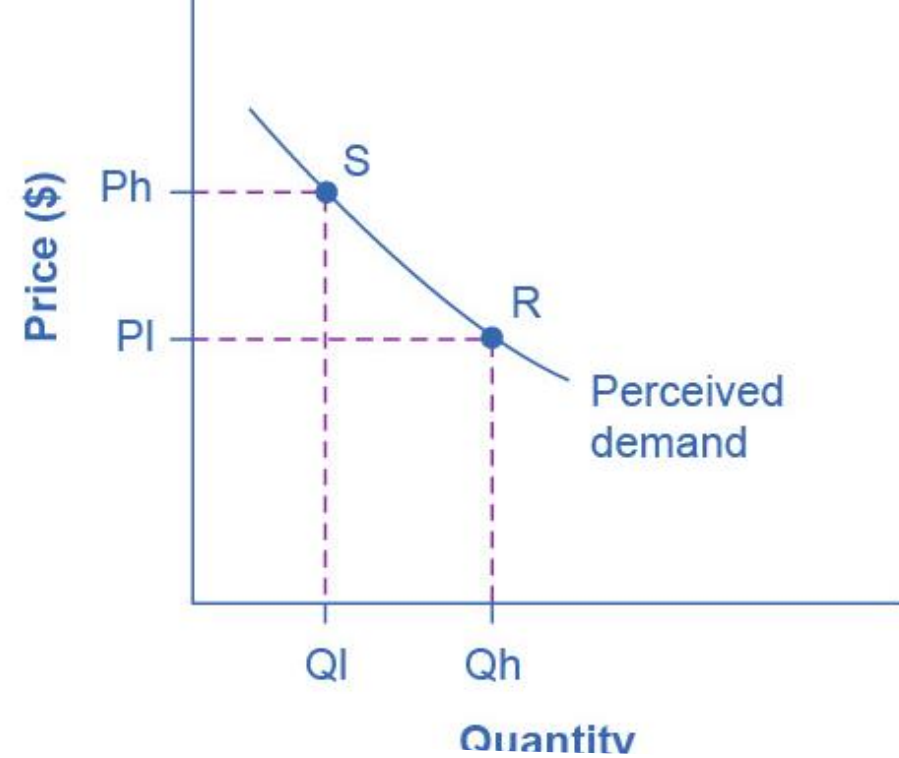
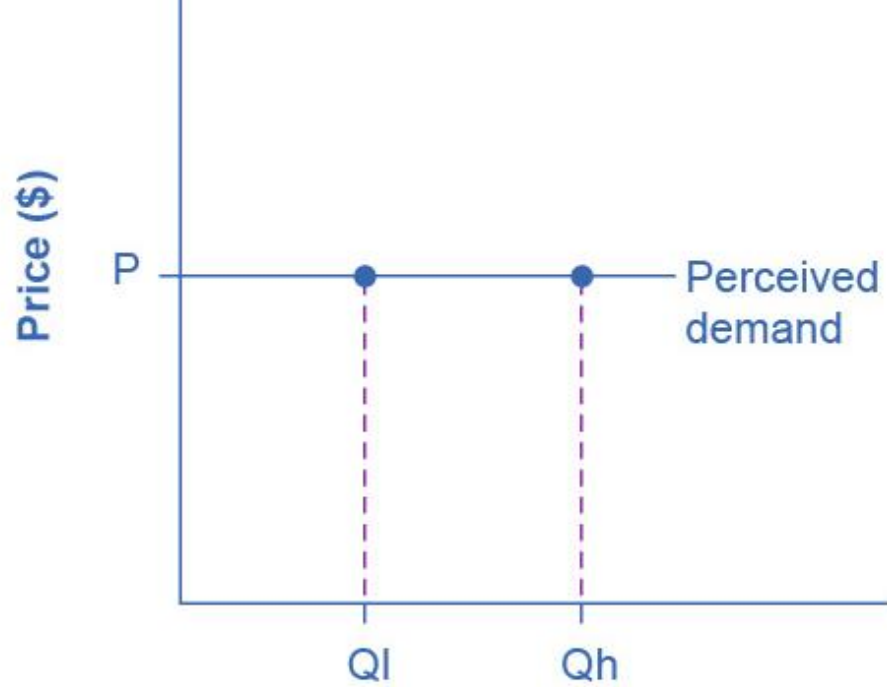
(a) Perceived demand for a perfect competitor



(b) Perceived demand for a monopolist

## The Perceived Demand Curve for a Perfect Competitor and a Monopolist

- In graph (a), a perfectly competitive firm's demand curve is flat.
- The flat shape means that the firm can sell either a low quantity ( $Q_l$ ) or a high quantity ( $Q_h$ ) at exactly the same price ( $P$ ).

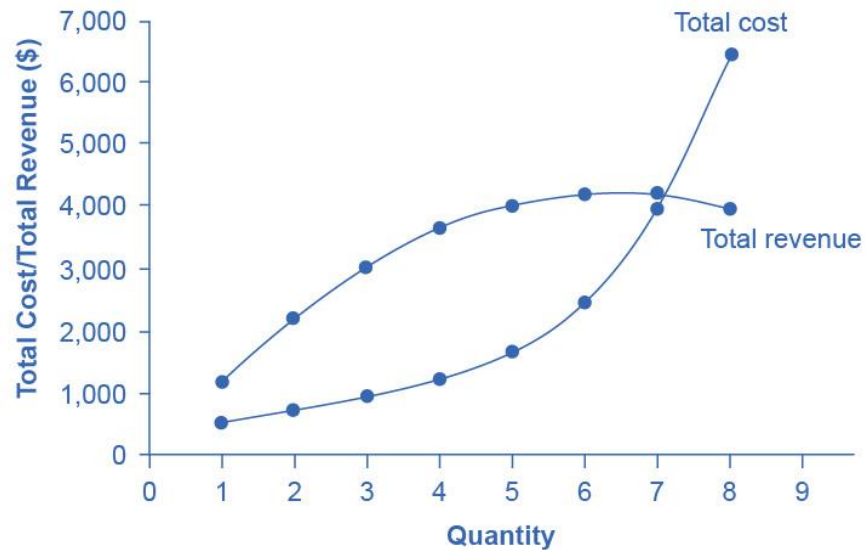


## The Perceived Demand Curve for a Perfect Competitor and a Monopolist, Continued

- A monopolist's demand curve is the same as the market demand curve, which for most goods is downward-sloping.
- So, if the monopolist chooses a high level of output ( $Q_h$ ), it can charge only a relatively low price ( $P_l$ );
- Conversely, if the monopolist chooses a low level of output ( $Q_l$ ), it can then charge a higher price ( $P_h$ ).
- The challenge for the monopolist is to choose the combination of price and quantity that maximizes profits.

# Total Cost and Total Revenue for a Monopolist

- Total costs rise as output increases.
- The highest profit will occur at the quantity where total revenue is the farthest above total cost.



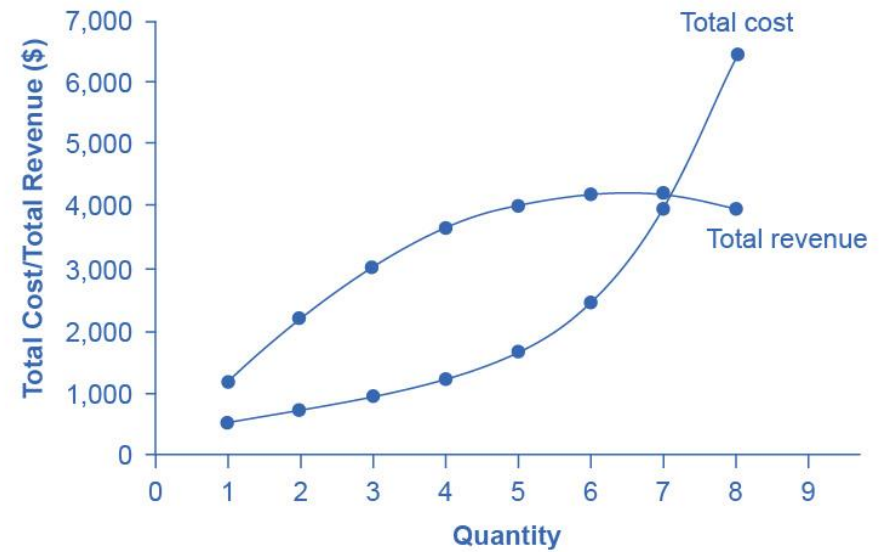
## Total Revenue and Total Cost for the HealthPill Monopoly

- Total revenue for the monopoly firm called HealthPill first rises, then falls.
- Low levels of output bring in relatively little total revenue, because the quantity is low.
- High levels of output bring in relatively less revenue, because the high quantity pushes down the market price.
- The total cost curve is upward-sloping.



# Total Revenue and Total Cost for the HealthPill Monopoly, Continued

- Profits will be highest at the quantity of output where total revenue is most above total cost.
- The profit-maximizing level of output is not the same as the revenue-maximizing level of output, which should make sense, because profits take costs into account and revenues do not.

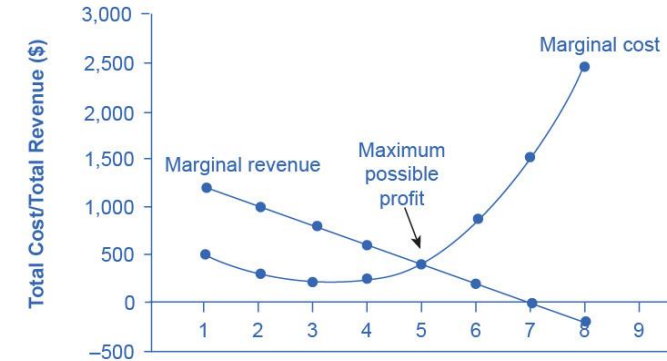


# Marginal Revenue and Marginal Cost for a Monopolist

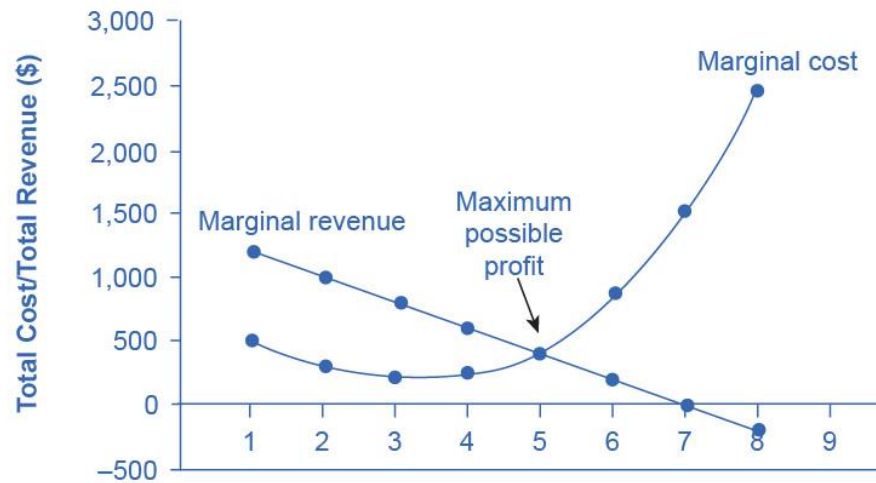
- In the real world, a monopolist often does not have enough information to analyze its entire total revenues or total costs curves.
  - The firm does not know exactly what would happen if it were to alter production dramatically.
- However, a monopolist often has fairly reliable information about how changing output by small or moderate amounts will affect its marginal revenues and marginal costs.
- **Marginal profit** - profit of one more unit of output, computed as  $\text{marginal revenue} - \text{marginal cost}$ .

## Marginal Revenue and Marginal Cost for the HealthPill Monopoly

- For a monopoly like HealthPill, marginal revenue decreases as it sells additional units of output.
- The marginal cost curve is upward-sloping.
- The profit-maximizing choice for the monopoly will be to produce at the quantity where MR = MC.



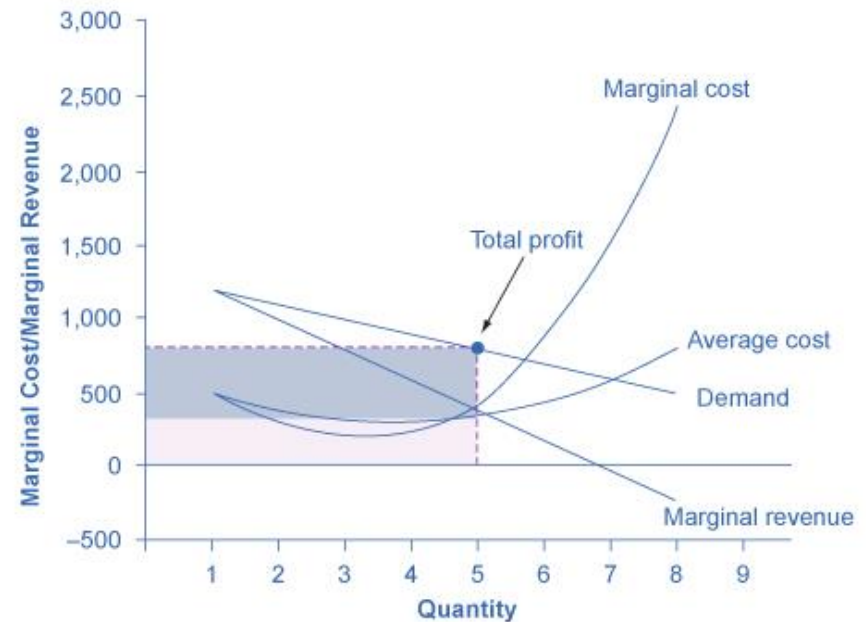
## Marginal Revenue and Marginal Cost for the HealthPill Monopoly, Continued



- If the monopoly produces a lower quantity, then  $MR > MC$  at those levels of output, and the firm can make higher profits by expanding output.
- If the firm produces at a greater quantity, then  $MC > MR$ , and the firm can make higher profits by reducing its quantity of output.

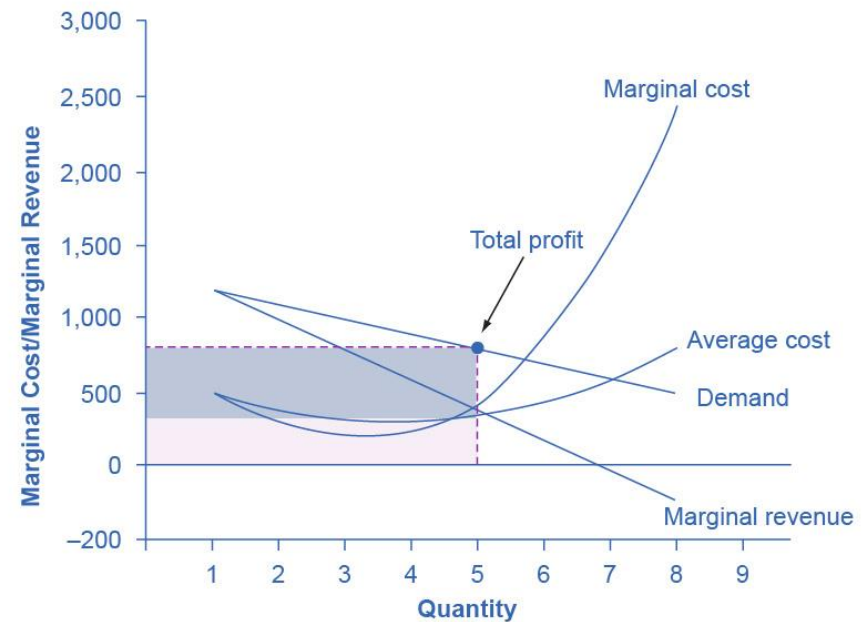
# Illustrating Profits at the HealthPill Monopoly

- Using the same MR and MC curves, the AC curve and the demand curve are added.
- The HealthPill firm first chooses the quantity where  $MR = MC$  of 5.
- The monopolist then decides what price to charge by looking at the demand curve it faces.
- The large box, with quantity on the horizontal axis and demand (which shows the price) on the vertical axis, shows total revenue for the firm.



# Illustrating Profits at the HealthPill Monopoly, Continued

- The lighter-shaded box, which is quantity on the horizontal axis and average cost of production on the vertical axis shows the firm's total costs.
- The large total revenue box minus the smaller total cost box leaves the darkly shaded box that shows total profits.
- Since the price charged is above average cost, the firm is earning positive profits.

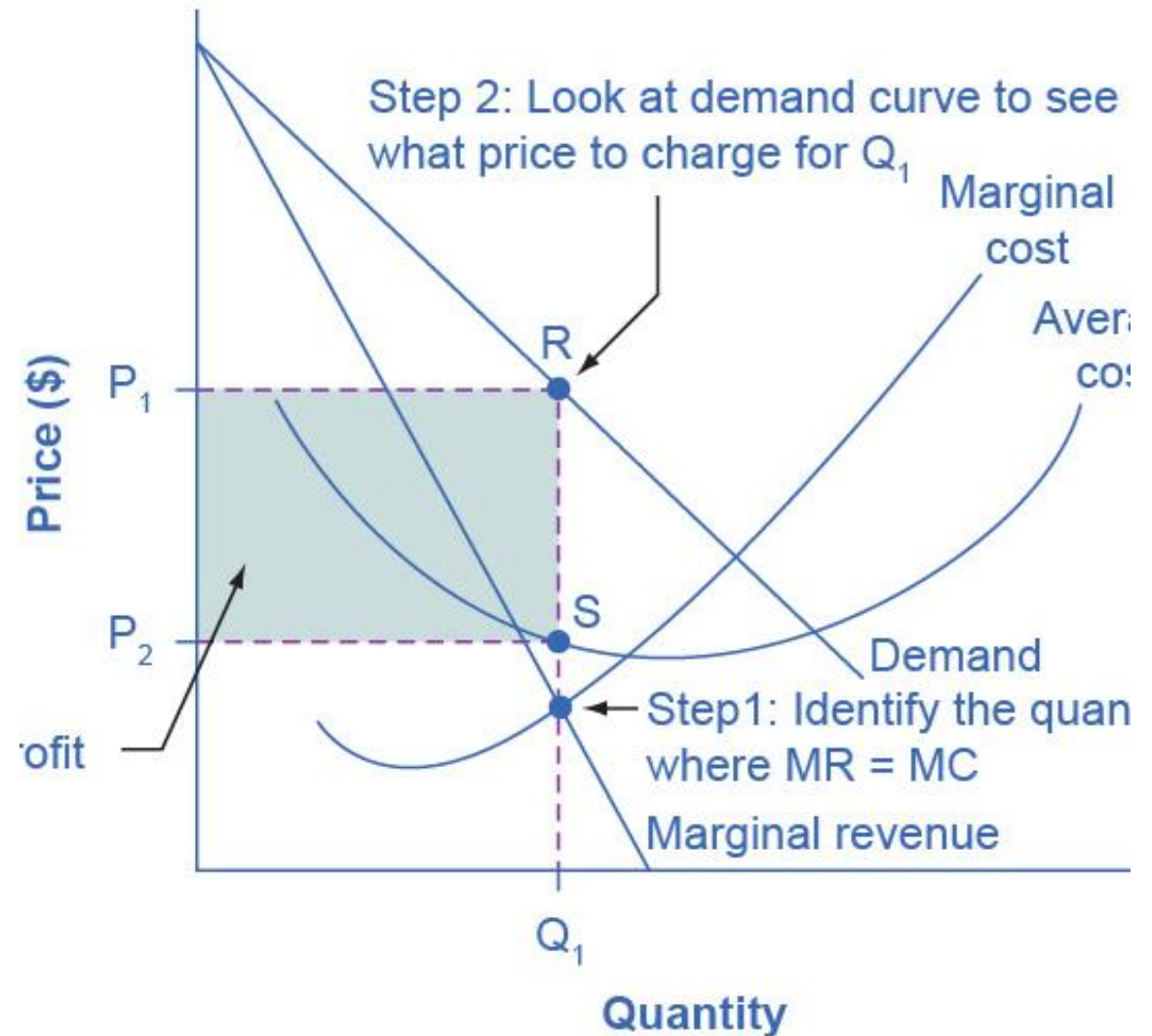


# How a Profit-Maximizing Monopoly Decides Price

- Step 1: The Monopolist Determines Its Profit-Maximizing Level of Output
- Step 2: The Monopolist Decides What Price to Charge
- Step 3: Calculate Total Revenue, Total Cost, and Profit

# How a Profit-Maximizing Monopoly Decides Price

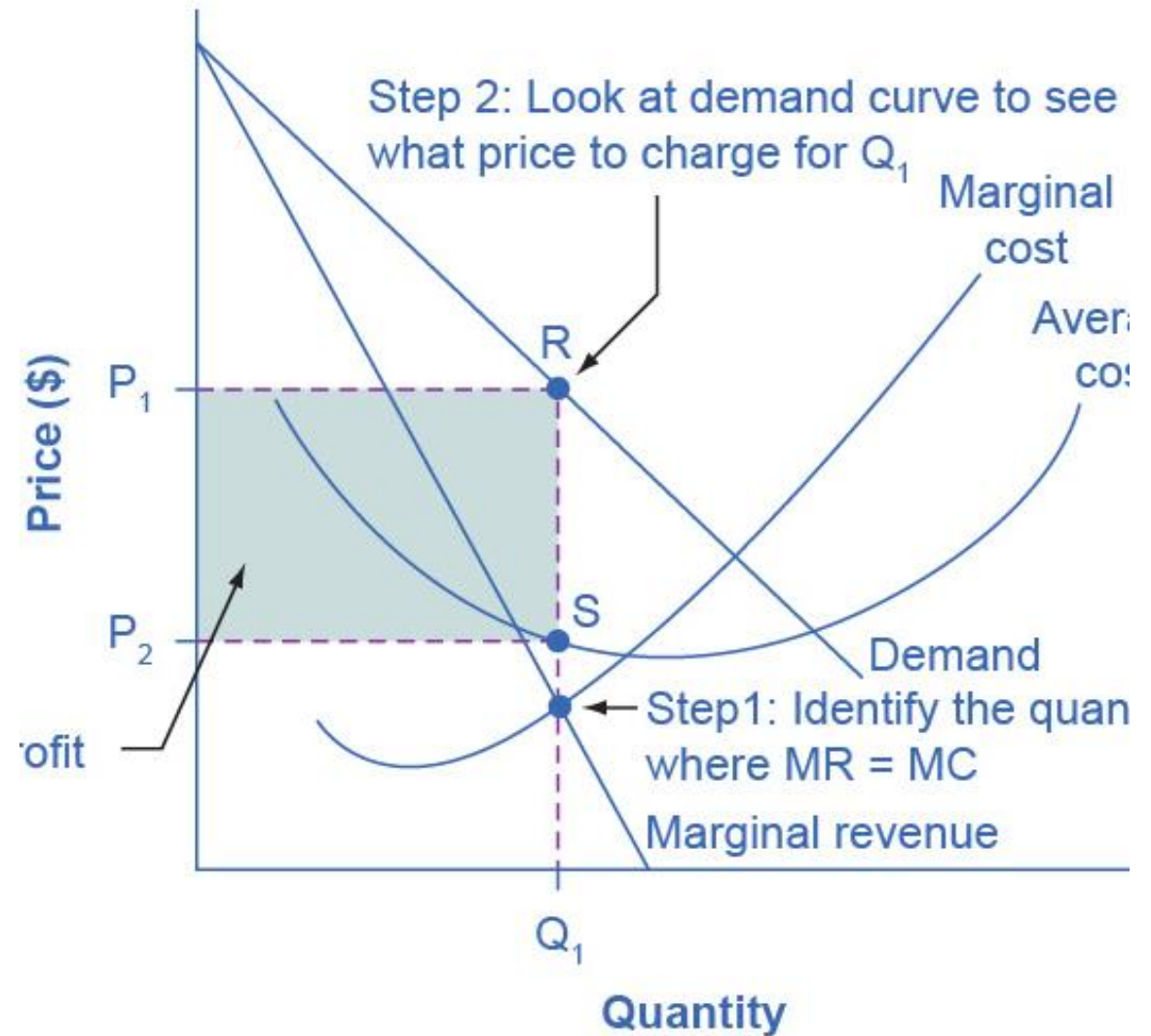
- Step 1, the monopoly chooses the profit-maximizing level of output  $Q_1$ , by choosing the quantity where MR = MC.
- Step 2, the monopoly decides how much to charge for output level  $Q_1$  by drawing a line straight up from  $Q_1$  to point R on its perceived demand curve.
- Thus, the monopoly will charge a price ( $P_1$ ).

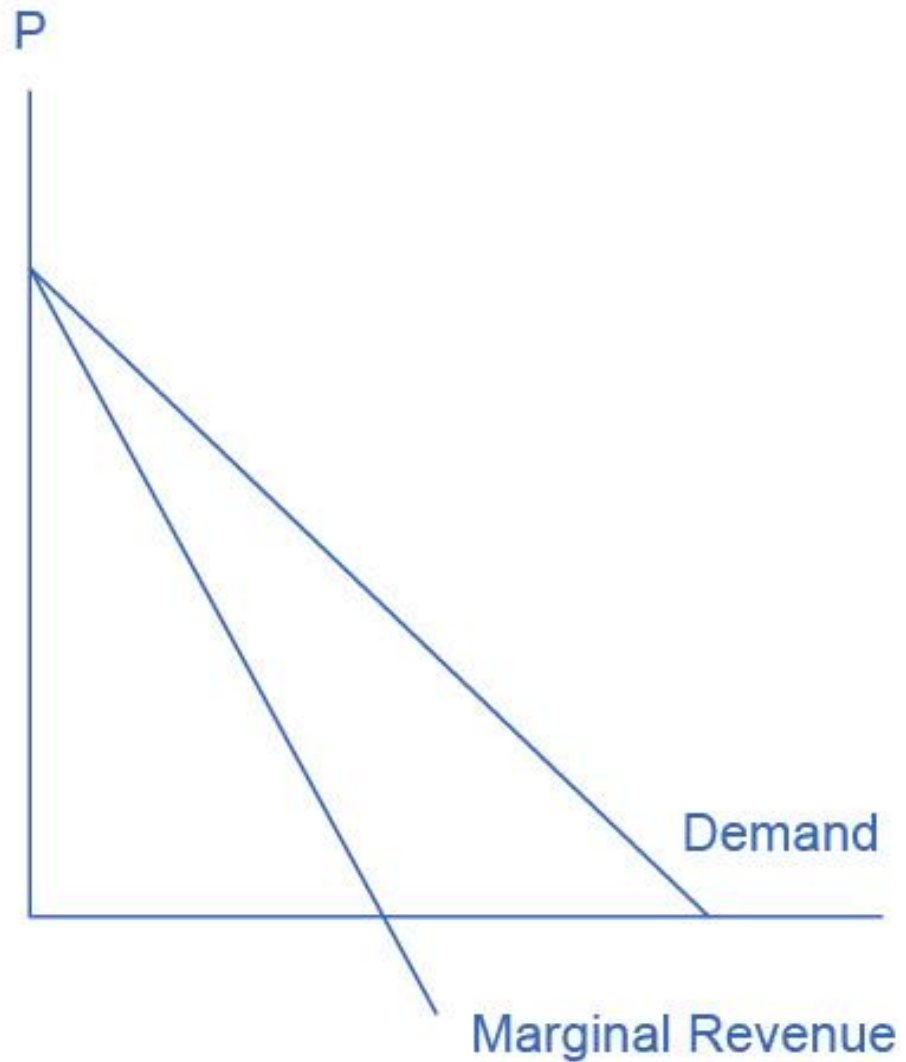




## How a Profit-Maximizing Monopoly Decides Price, Continued

- Step 3, the monopoly identifies its profit.
  - *Total revenue* will be  $Q_1$  multiplied by  $P_1$ .
  - *Total cost* will be  $Q_1$  multiplied by the average cost of producing  $Q_1$ , which point S shows on the average cost curve to be  $P_2$ .
  - Profits will be the *total revenue rectangle* - *total cost rectangle*, which the shaded zone in the figure shows.





## The Monopolist's Marginal Revenue Curve versus Demand Curve

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- Because the market demand curve is conditional, the marginal revenue curve for a monopolist lies *beneath* the demand curve.



# The Inefficiency of Monopoly

- **Allocative efficiency** - producing the optimal quantity of some output; the quantity where the marginal benefit to society of one more unit just equals the marginal cost.
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Credits: Greenlaw, S. A., Shapiro, D., & MacDonald, D. (2022). *Principles of economics* (3rd ed.). OpenStax. <https://openstax.org/books/principles-economics-3e>