Monopoly Profit Maximization

Chapter 15-3

## A Model of Monopoly

- How much should the monopolistic firm choose to produce if it wants to maximize profit?

## The Monopolist's Price and Output Numerically

- The first thing to remember is that ***marginal revenue*** is the change in total revenue that occurs as a firm changes its output.

**TR=P x Q**

**MR = Change in Total Revenue / change in output**

**Another way to say it is:**
**"how much does your Total Revenue changes as you increase output"**

## The Monopolist's Price and Output Numerically

- When a monopolist increases output, it lowers the price on all previous units.
- As a result, a monopolist's marginal revenue is always below its price.

## The Monopolist's Price and Output Numerically

- In order to maximize profit, a monopolist produces the output level at which marginal cost equals marginal revenue.
- Producing at an output level where *MR* > *MC* or where *MR* < *MC* will yield lower profits.

## Profit Maximizing Level of Output

- The goal of the monopolistic firm is to maximize profits, the difference between total revenue and total cost
- The monopoly maximizes profit when marginal revenue equals marginal cost
- **Marginal revenue (MR)** is the change in total revenue associated with a change in quantity
- **Marginal cost (MC)** is the change in total cost associated with a change in quantity

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## Profit Maximizing Level of Output

- The profit-maximizing condition of a monopolistic firm is:

**MR = MC**

- For a monopolistic firm, **MR < P**
- A monopolistic firm maximizes total profit, not profit per unit

If ***MR > MC***,

- The monopoly can increase profit by increasing output

If ***MR < MC***,

- The monopoly can increase profit by decreasing its output

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## Profit Maximization for a Monopolist

| Output | Price | TR | MR | TC | MC | ATC | Profit |
|---|---|---|---|---|---|---|---|
| 0 | 36 | 0 | — | 47 | — | | –47 |
| 1 | 33 | 33 | 33 | 48 | 1 | 48.00 | –15 |
| 2 | 30 | 60 | 27 | 50 | 2 | 25.00 | 10 |
| 3 | 27 | 81 | 21 | 54 | 4 | 18.00 | 27 |
| 4 | 24 | 96 | 15 | 62 | 8 | 15.50 | 34 |
| 5 | 21 | 105 | 9 | 78 | 16 | 15.60 | 27 |
| 6 | 18 | 108 | 3 | 102 | 24 | 17.00 | 6 |
| 7 | 15 | 105 | –3 | 142 | 40 | 20.29 | –37 |
| 8 | 12 | 96 | –9 | 196 | 56 | 24.75 | –102 |
| 9 | 9 | 81 | –15 | 278 | 80 | 30.89 | –197 |

## The Monopolist's Price and Output Graphically

- The marginal revenue curve is a graphical measure of the change in revenue that occurs in response to a change in price.
- It tells us the additional revenue the firm will get by expanding output.

## *MR = MC* Determines the Profit-Maximizing Output**

- If *MR > MC*, the monopolist gains profit by increasing output.
- If *MR < MC*, the monopolist gains profit by decreasing output.
- If *MC = MR*, the monopolist is maximizing profit.

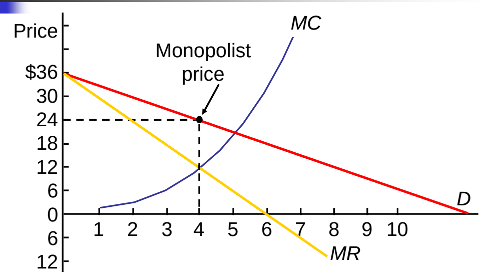
## The Price a Monopolist Will Charge

- The *MR = MC* condition determines the quantity a monopolist produces.
- The monopolist will charge the maximum price consumers are willing to pay for that quantity.
- That price is found on the demand curve.

## The Price a Monopolist Will Charge

- To determine the profit-maximizing price (where MC = MR), first find the profit maximizing output.

## Determining the Monopolist's Price and Output




## Profits and Monopoly

- Draw the firm's marginal revenue curve.
- Determine the output the monopolist will produce by the intersection of the *MC* and *MR* curves.

## Profits and Monopoly

- Determine the price the monopolist will charge for that output.
- Determine the average cost at that level of output.

## Profits and Monopoly

- Determine the monopolist's profit (loss) by subtracting average total cost from average revenue (*P*) at that level of output and multiply by the chosen output.

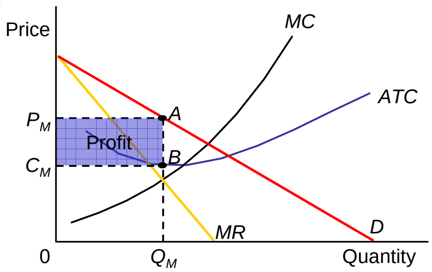
## Profits and Monopoly

- The monopolist will make a profit if price exceeds average total cost.
- The monopolist will make a normal return if price equal average total cost.
- The monopolist will incur a loss if price is less than average total cost.

## A Monopolist Making a Profit

- A monopolist can make a profit.

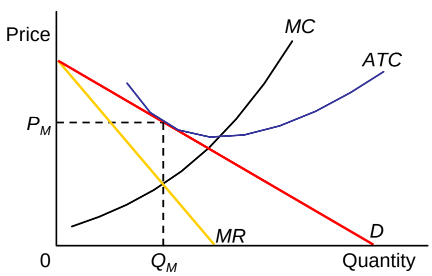
## A Monopolist Making a Profit




## A Monopolist Breaking Even

- A monopolist can break even.

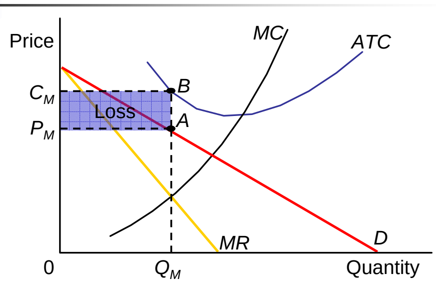
## A Monopolist Breaking Even




## A Monopolist Making a Loss

- A monopolist can make a loss.

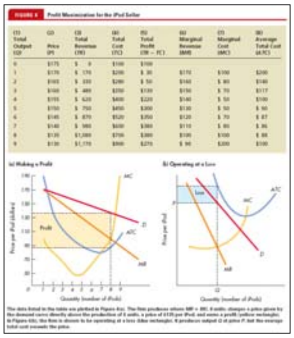
## A Monopolist Making a Loss




## Profit Maximization

- The monopoly firm will **not** set the price arbitrarily high, the profit-maximizing price still corresponds to the point where MR=MC.
- The monopoly firm's **market power** will allow the firm to achieve above-normal profits.

# Profit Maximization



# Monopolistic Profit Maximization Table

| Q | P ($) | TR ($) | MR ($) | TC ($) | MC ($) | ATC ($) | Profit ($) |
|---|---|---|---|---|---|---|---|
| 0 | 36 | 0 | | 47 | | --- | -47 |
| | | | 33 | | 1 | | |
| 1 | 33 | 33 | | 48 | | 48.00 | -15 |
| | | | 27 | | 2 | | |
| 2 | 30 | 60 | | 50 | | 25.00 | 10 |
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| | | | -15 | | 80 | | |
| 9 | 9 | 81 | | 278 | | 30.89 | -197 |

The profit-maximizing condition is:
**MR = MR**

**If MC < MR, increase production**

**Profit maximizing quantity is where MC = MR**

**If MC > MR, decrease production**

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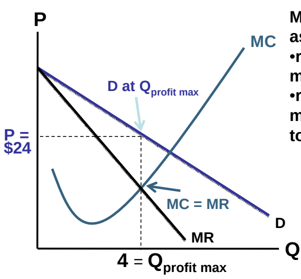
# Monopolistic Profit Maximization Graph




**Marginal revenue is not constant as Q increases because:**
**•revenue increases as the monopolist sells more**
**•revenue decreases because the monopolist must lower the price to sell more**

**Find output where MC = MR, this is the profit maximizing Q**

**Find how much consumers will pay where the profit max Q intersects demand, this is the monopolist price**

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# Monopoly Profit and Loss

- A monopolist will suspend operations in the short run if its price does not exceed the average variable cost at the quantity the firm produces.
- A monopolist will shut down permanently if revenue is not likely to equal or exceed all costs in the long run.
- In contrast, however, if a monopolist makes a profit, barriers to entry will keep other firms out of the industry.

# Monopoly Myths

1. A monopolist can charge any price it wants and will reap unseemly profits by continually increasing the price.
2. A monopolist is not sensitive to customers.
3. A monopolist cannot make a loss.

**All Not True!**