<div dir="rtl">محمد عامرية</div>

A market is described as a monopoly if it has only one supplier. This single firm faces the entire market demand curve. Using its knowledge of this demand curve, the monopoly makes a decision on how much to produce. Unlike the single competitive firm's output decision (which has no effect on market price), the monopoly output decision will completely determine the good's price.

CAUSES OF MONOPOLY

The reason monopoly markets exist is that other firms find it unprofitable or impossible to enter the market. Barriers to entry are the source of all monopoly power. If other firms could enter the market, there would, by definition, no longer be a monopoly. There are two general types of barriers to entry: technical barriers and legal barriers.

Technical Barriers to Entry

A primary technical barrier to entry is that the production of the good in question exhibits decreasing average cost over a wide range of output levels. That is, relatively large-scale firms are more efficient than small ones. In this situation, one firm finds it profitable to drive others out of the industry by price cutting.
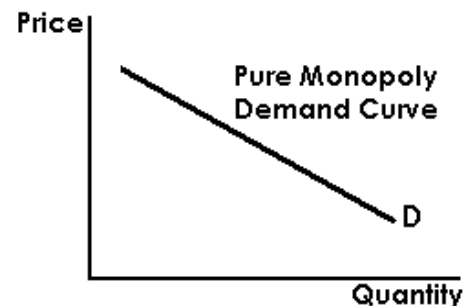
Similarly, once a monopoly has been established, entry by other firms is difficult because any new firm must produce at low levels of output and therefore at high average costs. Because this barrier to entry arises naturally as a result of the technology of production, the monopoly created is sometimes called *a natural monopoly*.

Legal Barriers to Entry

Many pure monopolies are created as a matter of law rather than as a result of economic conditions. One important example of a government-granted monopoly position is the legal protection provided by a patent.

Monopoly Demand

The demand curve for the monopolist is quite different from that of the pure competitive. Because the pure monopolist is the industry, its demand curve is the market demand curve. And because market demand is not perfectly elastic, the monopolist's demand curve is down sloping (the quantity demanded increases as price decreases).

Average Revenue and Marginal Revenue

The monopolist average revenue is the price it receives per unit sold.

Total Revenue (TR) = P x Q

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Average Revenue (AR) = Price (P)

Marginal revenue: change in revenue resulting from a one-unit increase in output.

Marginal Revenue = $\dfrac{\Delta TR}{\Delta Q} = \dfrac{\partial TR}{\partial Q}$

➢ MR ≠ P

Example:

A monopolist's faces a market demand curve given by: $Q = 70 - P$. What is the marginal revenue function of the monopolist?

$TR = P \, x \, Q$

From the demand curve: $P = 70 - Q$

$TR = (70 - Q) \, Q = 70Q - Q2$

Marginal Revenue = $\dfrac{\partial TR}{\partial Q} = 70 - 2Q$
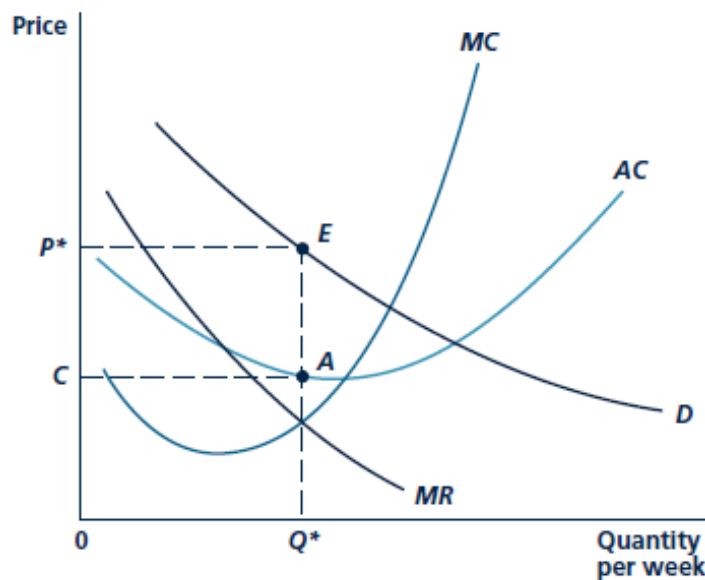
Profit Maximization:

To maximize profits, a monopoly will choose the output at which marginal revenue equals marginal costs $(MR = MC)$

The demand curve is downward-sloping so marginal revenue is less than price (To sell more, the firm must lower its price on all units to be sold in order to generate the extra demand).

A monopoly will produce an output level in which price exceeds marginal cost.

Q* is the profit maximizing output level. At this output level the price equal to P*, and the firm will earn profit equal the area P*E A C.

If a firm produced less than Q*, the loss in revenue (MR) will exceed the reduction in costs (MC) so profits would decline.

The increase in costs (MC) would exceed the gain in revenue (MR) if output exceeds Q*. Hence, profits are maximized when MR = MC.

Example

A monopolist's faces a market demand curve given by: $Q = 70 - P$. Assume that the monopolist has a total cost given by: $TC = 0.25Q^2 - 5Q + 300$.

a. What price quantity combination will be chosen to maximize profits?

To max profit: $MR = MC$

$TR = P \times Q = (70 - Q) Q = 70Q - Q^2 \quad \Rightarrow \quad MR = 70 - 2Q$

$MC = \dfrac{\partial TC}{\partial Q} = 0.5Q - 5$

To max profit: $MR = MC \quad \Rightarrow \quad 70 - 2Q = 0.5Q - 5 \quad \Rightarrow \quad 2.5Q = 75 \quad \Rightarrow \quad Q = 30 \, units$

From the demand curve: $P = 70 - Q = 70 - 30 = \$40$.

b. What is the monopolist profit?

$Profit = TR - TC = 70Q - Q^2 - (0.25Q^2 - 5Q + 300) = 75Q - 1.25Q^2 - 300$

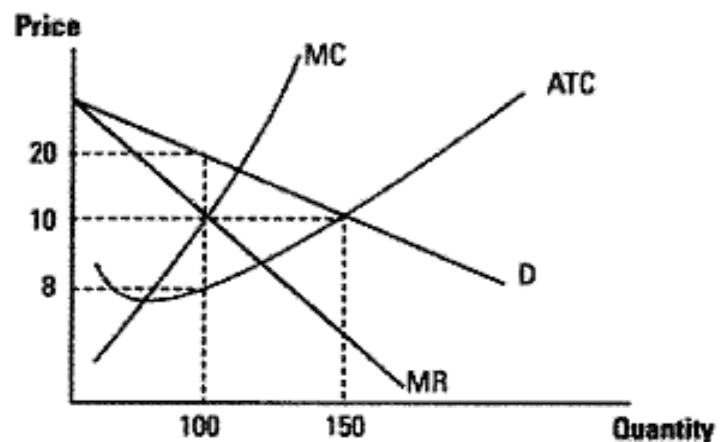$Profit = 75(30) - 1.25(30)^2 - 300 = 2,250 - 1,125 - 300 = \$825$

Example

The diagram depicts the situation facing a monopolist. To maximize profits, what output level should the firm produce and what is the monopolist profit.

To max profit: $MR = MC \quad : \quad At \, Q = 100$

$Profit = Q (P - ATC)$

$At \, Q = 100, P = 20 \, and \, ATC = 8$
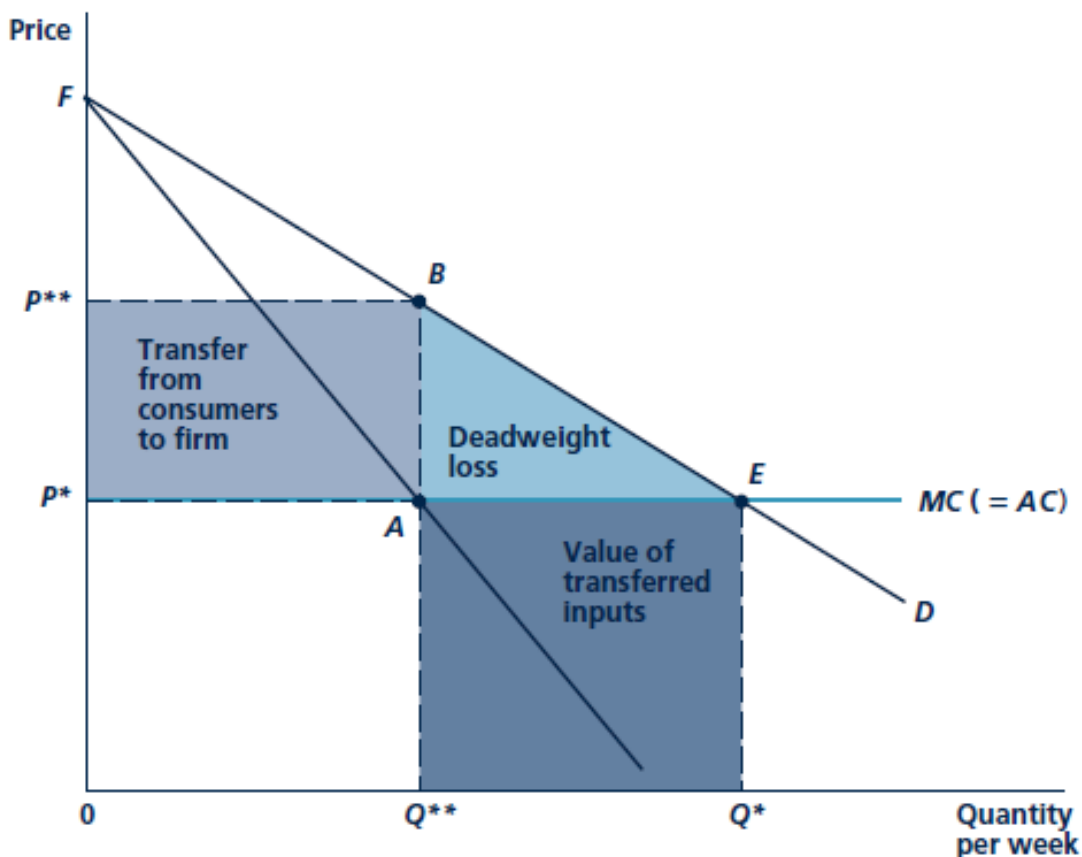
$Profit = Q (P - ATC) = 100(20 - 8) = \$1,200$

Monopoly Supply Curve:

The pure monopolist has no supply curve. There is no unique relationship between price and quantity supply for a monopolist. Like the competitive firm, the monopolist equates marginal revenue and marginal cost to determine output, but for the monopolist marginal revenue is less than price. Because the monopolist does not equate marginal cost and price, it is possible for different demand condition to bring about different prices for the same output.

Conclusion: There is no single, unique price associated with each output level that maximizes profit, and so there is no supply curve for the pure monopoly.

WHAT'S WRONG WITH MONOPOLY?

Monopolies pose several problems for any economy. Here, we look at two specific complaints: *first, monopolies produce too little output*; and *second, the high prices they charge* end up redistributing wealth from consumers to the "fat cat" firm owners. Our discussion will be illustrated by Figure below, which compares the output produced in a market characterized by perfect competition with the output produced in the same market when it only contains one firm.

A perfectly competitive industry would produce output level Q* at a price of P*. A monopolist would opt for Q** at a price of P**. Consumer expenditures and productive inputs worth AEQ*Q** are reallocated into the production of other goods. Consumer surplus equal to P**BAP* is transferred into monopoly profits. There is a deadweight loss given by BEA.

Example

A monopolist faces a market demand curve given by: $Q = 70 - P$, the monopolist's marginal revenue curve is given by: $MR = 70 - 2Q$.

a. If the monopolist can produce at constant average and marginal cost of $AC = MC = 6$, what output level will the monopolist choose in order to max profit?

To max profit: MR = MC

$$TR = P \times Q = (70 - Q)Q = 70Q - Q^2 \Rightarrow MR = 70 - 2Q$$

$$MR = MC \Rightarrow 70 - 2Q = 6 \Rightarrow 2Q = 64 \Rightarrow Q = 32$$

b. What is the price at this output level? What are the monopolist's profits? What is the consumer surplus? What is the deadweight loss of monopoly?
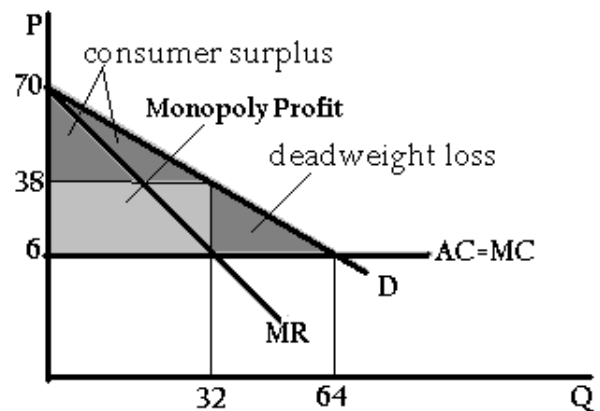
From the demand curve: $Q = 70 - P$

$\Rightarrow 32 = 70 - P \Rightarrow P = \$38$

From the figure:

Monopolist's profit = $(38 - 6) \times 32 = \$1,024$

Consumer surplus = $(70 - 38) \times 32 = \$1,024$

Deadweight loss = ½ {$(38 - 6) \times (64 - 32)$} $= \$512$

Price Discrimination

Price discrimination occurs if identical units of output are sold at different prices.

If the monopolist could sell its product at different prices to different customers, a new opportunity exists as shown in Figure.

The monopolist's price-output choice (P**, Q**) provides targets for additional profits through successful price discrimination. It may obtain a portion of the consumer surplus given by area FBP** through discriminatory entry fees, whereas it can create additional mutually beneficial transactions (area BEA) through quantity discounts.

Market Separation

A second way that a monopoly firm may be able to practice price discrimination is to separate its potential customers into two or more categories and to charge different amounts in these markets. If buyers cannot shift their purchasing from one market to another in response to price differences, this practice may increase profits over what is obtainable under a single-price policy.

If two markets are separate, a monopolist can maximize profits by selling its product at different prices in the two markets. The firm would choose that output for which MC = MR in each of the markets. <u>*The diagram shows that the market that has a less elastic demand curve is charged the higher price by the price discriminator.*</u>

<u>Example:</u>

Suppose a textbook monopoly can produce any level of output it wishes at a constant marginal and average cost of \$5 per book. Assume that the monopoly sells its book in two different markets that are separated by some distance. The demand curve in the first market is given by: $Q1 = 55 - P_1$ and the curve in the second market is given by: $Q2 = 70 - 2P_2$

If the monopolist can maintain the separation between the two markets, what level of output should be produced in each market and what price will prevail in each market? What are total profits in this situation?

Market 1:	Market 2:
Total revenue curve = P_1 x Q_1	Total revenue curve = P_2 x Q_2
From the demand curve: $P_1 = 55 - Q_1$	From the demand curve: $P_2 = 35 - \frac{1}{2} Q_2$
$TR1 = 55Q_1 - Q_1^2$ ⇨ $MR1 = 55 - 2Q_1$	$TR_2 = 35Q_2 - \frac{1}{2} Q_2^2$ ⇨ $MR_2 = 35 - Q_2$
To max profit in market 1: $MR_1 = MC$	To max profit in market 2: $MR_2 = MC$
$55 - 2Q_1 = 5$ ⇨ $2Q_1 = 50$ ⇨ $Q_1 = 25$ units	$35 - Q_2 = 5$ ⇨ $Q_2 = 30$ units
But $P_1 = 55 - Q_1$ ⇨ $P_1 = 55 - 25 = \$30$	
Profit = $TR_1 - TC_1$	But $P_2 = 35 - \frac{1}{2} Q_2$ ⇨ $P_2 = 35 - \frac{1}{2} (30) = \$20$
$TC_1 = ATC$ x $Q_1 = 5Q_1$	Profit = $TR_2 - TC_2$
	$TC2 = ATC$ x $Q_2 = 5Q_2$
⇨ Profit = Q(P - ATC) = 25(30 - 5) = \$625	⇨ Profit = Q(P - ATC) = 30(20 - 5) \$450

Total profits in this situation = profit in market 1 + profit in market 2

Total profits in this situation = 625 + 450 = \$1,075

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