

# MONOPOLY

## DEFINITION

*There is a market structure where there is a single firm to produce a particular commodity and there is no close substitute of that commodity in the market which is offered for sale to the buyers, is called monopoly.*

## ASSUMPTIONS

Assumptions or characteristics or conditions of monopoly are as below:

### **1. Sole supplier**

In this structure of market there is only a single seller and there is no rival firm in the market. A firm represents the entire industry of a particular commodity.

### **2. No close substitute**

There is no close substitute for the commodity which is produced by a monopolist firm.

### **3. No free entry**

There are barriers to entry in the market due to some strategic conditions.

a. Ownership of raw materials used in the production of a commodity.

b. Exclusive knowledge of production techniques.

c. Patent rights for a product or production process.

d. Govt. Issues license to a particular firm

e. The imposition of foreign trade barriers to exclude foreign competitors.

f. The existing firm adopts a limit pricing policy.

g. Heavy advertising is a marketing tact to prevent other firms.

### **4. Homogeneity**

The product of the monopolist firm may or may not be a homogeneous product.

### **5. Lack of knowledge of buyers**

Due to lack of knowledge of buyers from the market conditions, a monopolist can charge different prices of his product in different areas of market. It is called price discrimination policy of the monopolist.

## 6. Negative slope of demand curve

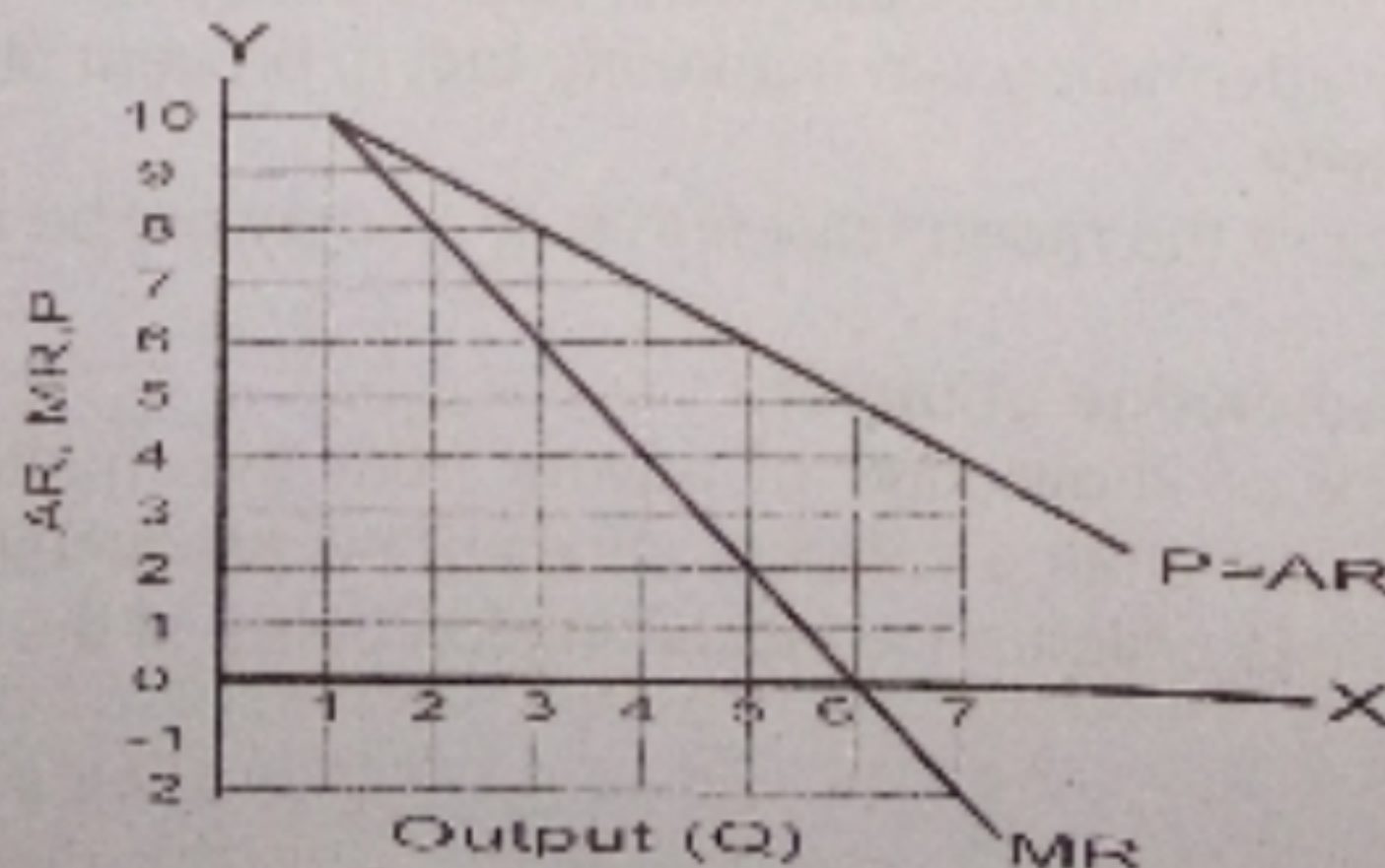
There is a single firm in the industry. Therefore, the firm's demand curve is the industry's demand curve. The slope of demand curve is negative due to the firm must lower its price if it is to sell an additional unit of its product. The buyers are free to purchase the commodity or forgo it.

### Revenue Curves under Monopoly

The revenue curves under monopoly can be derived with the help of following schedule.

Output or Quantity. (Q)	Price (P)	Total Revenue (TR)	Average Revenue (AR)	Marginal Revenue (MR)
1	10	10	10	10
2	9	18	9	8
3	8	24	8	6
4	7	28	7	4
5	6	30	6	2
6	5	30	5	0
7	4	28	4	-2

Under monopoly, the relationship among Marginal Revenue (MR), Average Revenue (AR) and Total Revenue (TR) at various levels of output (Q) is explained with the help of above schedule. The price (P) decreases at various levels of output (Q). Therefore, there is a decreasing rate of change in the TR. The firm must lower its price to sell an additional unit of its product. Price and average revenue are decreasing as output increases but they are identical. The Marginal Revenue (MR) is falling and is less than Average Revenue due to falling price.



In the diagram, Average Revenue (AR) curve falls down ward which is also the demand curve of the monopolist firm, the marginal revenue curve lies below the  $AR = P$  curve. Both curves have negative slope due to an inverse relationship between the price (P) and the output (Q) of a firm.

The slope of MR curve is twice steeper than the slope of AR curve because decreasing rate of MR is double than that of the rate of AR. This is the relationship between the slope of MR curve and the slope of AR curve.

## FIRM'S EQUILIBRIUM OR PRICE AND OUTPUT DETERMINATION UNDER MONOPOLY

### CONDITIONS OF EQUILIBRIUM

A monopolist firm is in equilibrium when the following two conditions are fulfilled

#### 1. Necessary condition

At the equilibrium level of output, the slope of total revenue is equal to the slope of total cost i.e.,  $MC = MR$

#### 2. Sufficient condition

At the equilibrium level of output, marginal cost curve cuts the marginal revenue curve from below or at the equilibrium point of output, slope of  $MC >$  slope of  $MR$ .

The equilibrium firm is analyzing in two ways regarding the time period i.e. short run and long run.

### A: Short-run equilibrium

There are various possible situations of a firm equilibrium relating to its profits and losses in short run.

#### i) Abnormal profit.

The output (Q) is measured on X-axis, while price, cost and revenue are measured on Y-axis. The AR curve is the demand curve of the firm having negative slope.

A monopolist firm is in equilibrium at point E where both conditions for equilibrium are fulfilled as shown in the diagram. The MC curve cuts MR curve at point E from below. Thus the equilibrium output OQ is sold at equilibrium price OP. A monopolist will sell the output by the intersection of MC and MR at the corresponding price OP.

A monopolist cannot decide independently both the quantity and price at which he wants to sell it.

$$\pi = TR - TC$$

$$TR = P \times Q$$

$$= OP \times OQ = OQAP$$

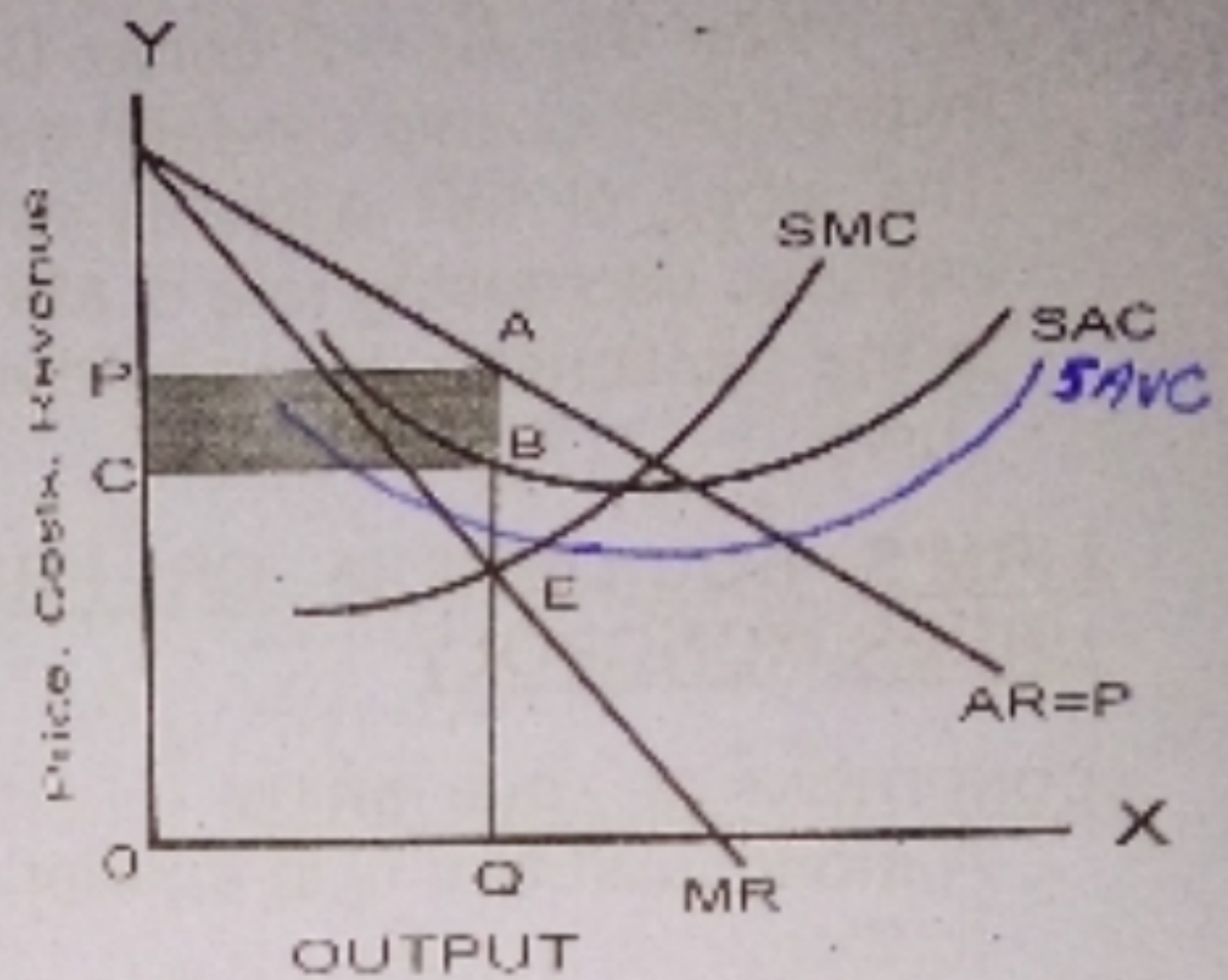
$$TC = AC \times Q$$

$$= BQ \times OQ = OQBC$$

$$\pi = OQAP - OQBC$$

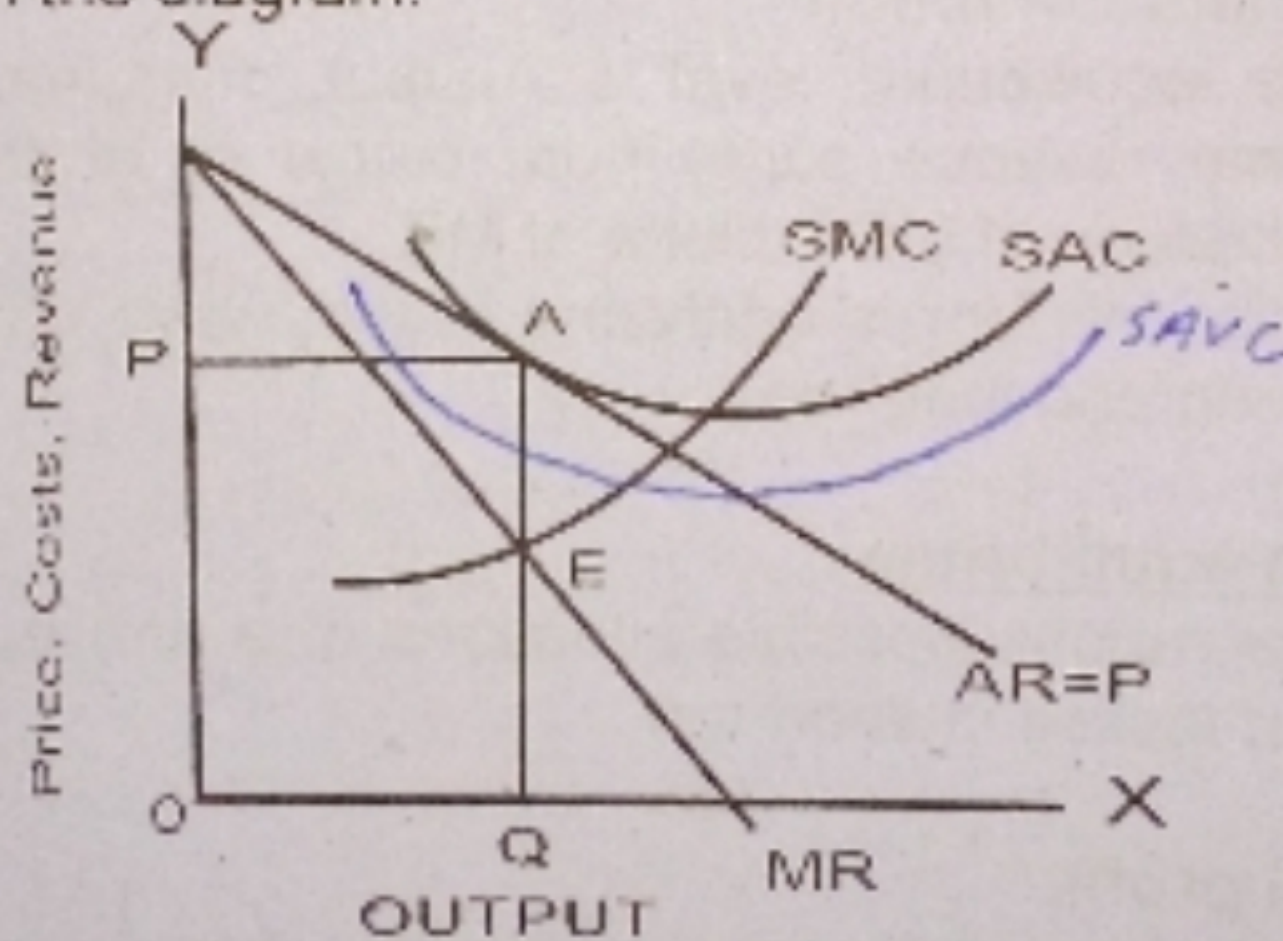
$$= ABCP$$

The monopolist obtains excess profit equal to the shaded area (ABCP) which is abnormal profit of the monopolist.



## ii. Normal profit

A monopolistic firm does not earn always abnormal profit in short-run. A firm may operate at normal profit which is explained with the help of diagram as shown. The geometrical explanation of the normal profit is shown below from the diagram.



$$TR = P \times Q$$

$$= OP \times OQ = OQAP$$

$$TC = AC \times Q$$

$$= AQ \times OQ = OQBC$$

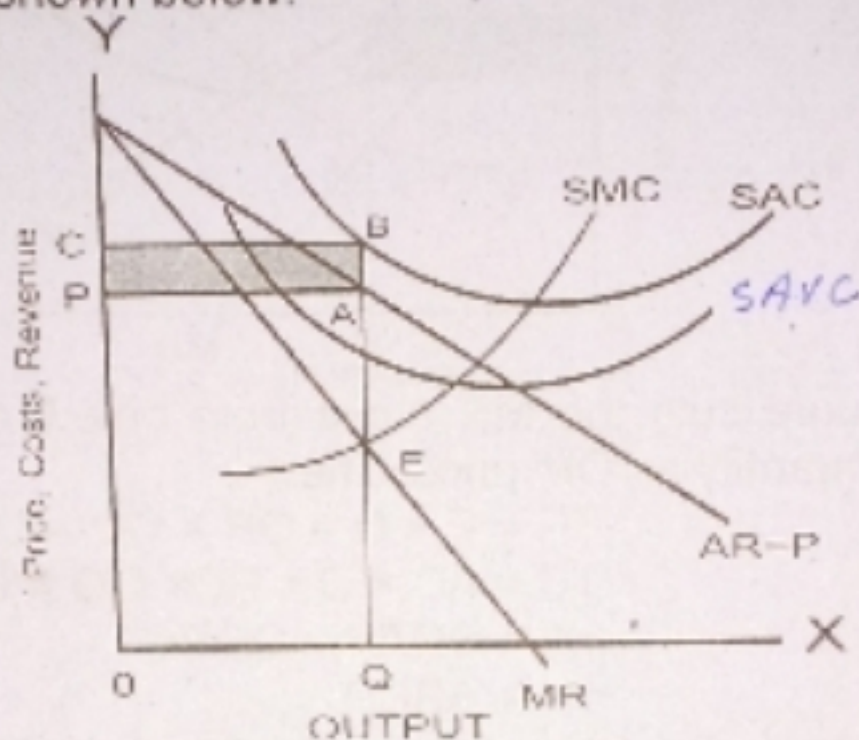
$$\pi = TR - TC$$

$$= OQAP - OQBC = 0$$

Therefore, the abnormal profit is nil which is not shown as shaded area in the diagram but normal profit is included in SAC.

### iii. Equilibrium with losses.

A monopolist firm also accepts losses in the short-run but covering its variable costs as shown below:



$$\begin{aligned}
 TR &= P \times Q \\
 &= OP \times OQ = OQAP \\
 TC &= AC \times Q \\
 &= BQ \times OQ = OQBC \\
 \pi &= TR - TC = OQAP - OQBC \\
 &= - (ABCP)
 \end{aligned}$$

The minus profit means loss. The monopolist firm suffers a loss equal to the shaded area ABCP. If the loss continues, and the firm can not cover its Average Variable Cost, then the firm shall have to close-down.