Elasticity of Demand

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Introduction

- **What is Demand:**

  It is the quantity of a good or service that consumers are willing and able to buy at a given price in a given time period.

  Demand is desire/want backed by money i.e.

  Demand= Desire + Ability to pay + Willingness to pay

  Demand is always related to price and time.

- **Demand Analysis:**

  Demand analysis means research into the desire of consumer for a particular product or service. Demand analysis is used to identify who wants to buy a given product how much they are likely to pay for it how many units they might purchase and other factors that can be used to determine product design, selling cost and advertising strategy for a product.

- **Elasticity of Demand:**

The responsiveness of demand to a change in any one of its determining factors is called the elasticity of demand. We can find the elasticity of demand by comparing the percentage price changes with the quantities demanded.

The law of demand shows the relationship between the price and demand, where elasticity of demand shows the relationship between changes in the price of commodities and demand of goods.

It indicates the ratio of this change in demand due to change in price.

Elasticity of demand mainly classified into Three category;

1. Price Elasticity of Demand
2. Income Elasticity of Demand
3. Cross Elasticity of Demand

Price Elasticity of demand

- *" If Other factors remain constant , demand of the product is also change. The ratio or measurement of change in demand is called elasticity of demand."*
- It represent the quantitative relationship between the change in price of commodity and resultant change in demand of the commodity.
- There is an inverse relationship between Price of commodity and its Demand of commodity.
- **Equation:**

$$\textbf{Elasticity of Demand} = \frac{\textit{Percentage change in demand of X}}{\textit{Percentage change in price of X}}$$

$$e_d = \frac{\Delta QP}{\Delta PQ}$$

Types of Price elasticity of Demand

- **Perfectly Elastic Demand: *ed* = ∞**

When a negligible or no change in price brings about a very large or infinite change in quantity demanded, then demand for such a commodity is said to be perfectly elastic.

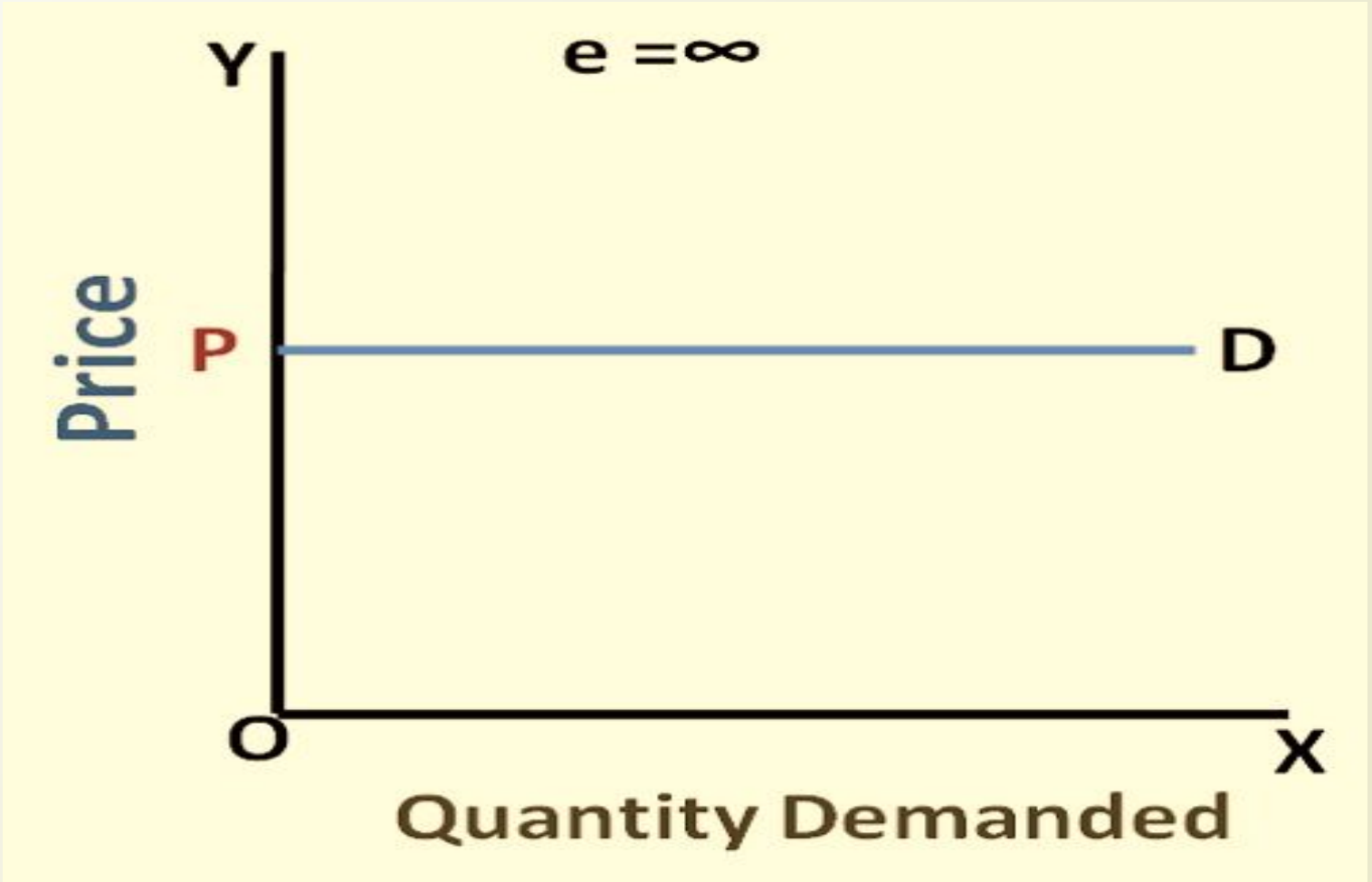
Suppose 1% decrease in the price of commodity X increases the demand by ∞

So, Price Elasticity of Demand ***ed*** $= \frac{\Delta QP}{\Delta PQ}$

$$\boldsymbol{ed} = \frac{\infty}{1\%}$$

$$\boldsymbol{ed} = \infty$$

- Its mathematically expressed as ***ed* = ∞**
- Demand curve will be Horizontal straight line.


e =∞
Y
Price
P
D
O
X
Quantity Demanded

- **Perfectly Inelastic Demand: $e_d = 0$**

When demand remain unaffected by the change in price movements. It is called Perfectly Inelastic Demand or Zero elasticity.

- It is mathematically expressed as $e_d = 0$.

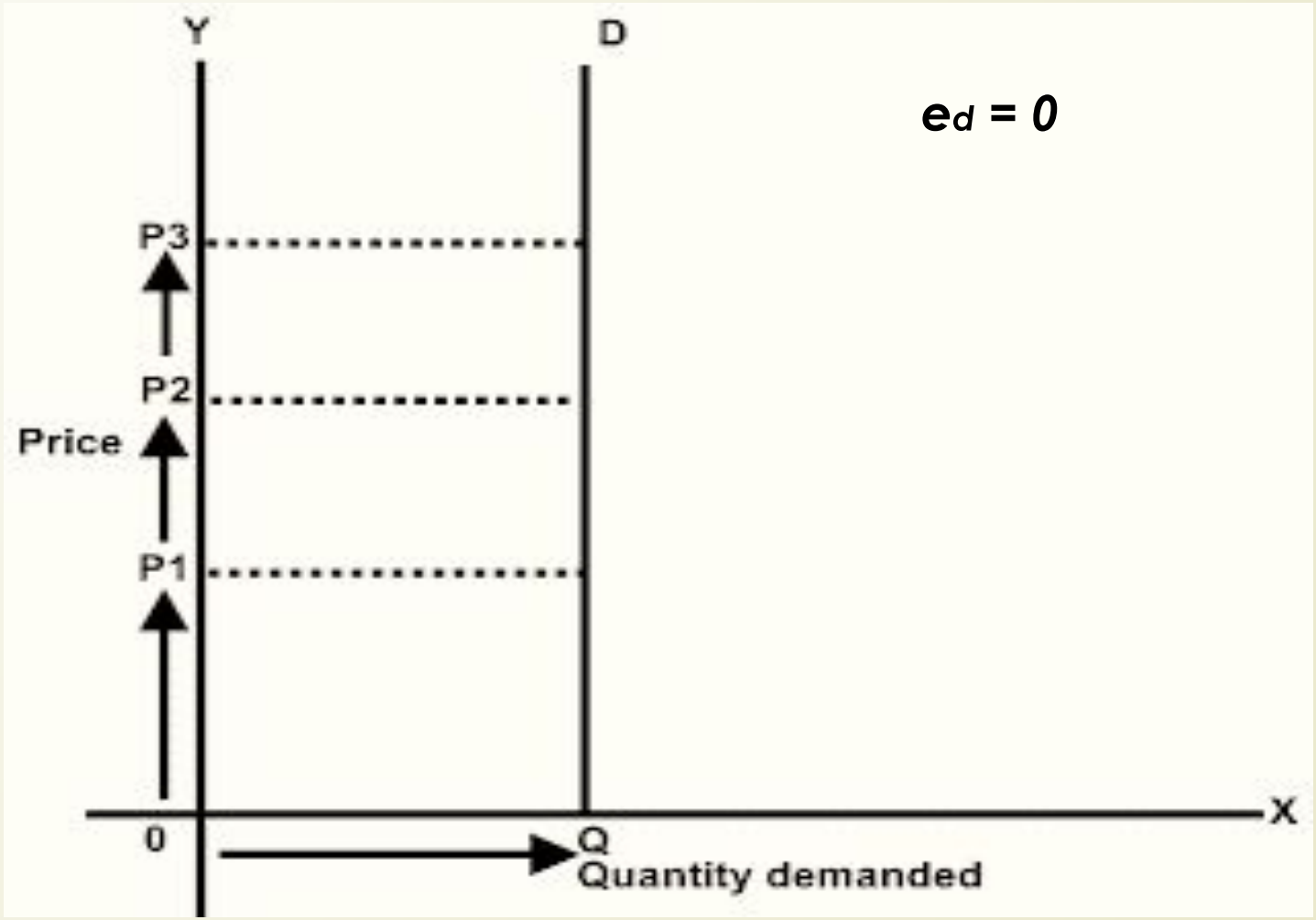
e.g. Demand of Commodity X is 100 units at a price of ₹ 20 if price increases to ₹ 30 but there is no change in demand then also once again it increases to ₹ 40 but the demand does not change and it remains constant at 100 unit. So elasticity of demand in this case is,

Price Elasticity of Demand $e_d = \frac{\Delta QP}{\Delta PQ}$

$$e_d = \frac{0\%}{25\%}$$

$$e_d = 0$$

- In this type , demand curve would be a straight vertical line


Y
D
$e_d = 0$
P3
P2
Price
P1
0
Q
X
Quantity demanded

- **Elastic Demand: $e_d > 1$**

When the change in the demand for the commodity is more than the proportionate change in its price, then the demand for commodity is said to be elastic. Value of such type of demand would be greater than one.

- It is mathematically expressed as $e_d > 1$

e.g. When the price of commodity X is ₹ 80 the demand is 200 unit. If the price decreases to ₹ 60 then the demand increases to 300 units.

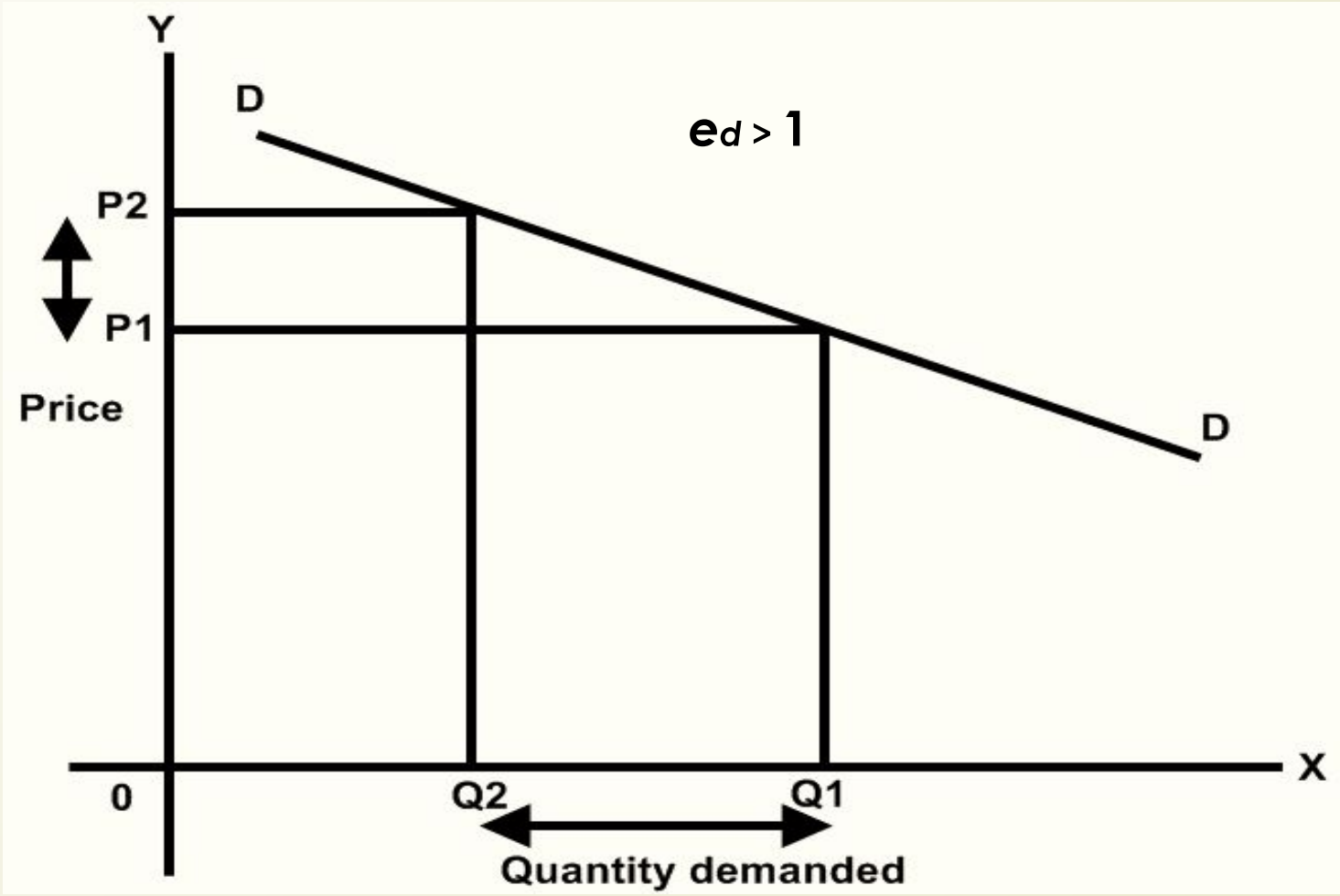
Price Elasticity of Demand $e_d = \frac{\Delta QP}{\Delta PQ}$

$$e_d = \frac{+50\%}{-25\%}$$

$$e_d = 2$$

$$\therefore \ e_d > 1$$

- It is shown by a flatter demand curve


Y
D
$e_d > 1$
P2
P1
Price
D
X
0
Q2
Q1
Quantity demanded

- **Inelastic Demand: $e_d < 1$**

When the change in the demand for the commodity is less than the proportionate change in its price, then the demand for commodity is said to be inelastic. Value of such type of demand would be less than one.

- It is mathematically expressed as $e_d < 1$

e.g. Suppose the price of commodity X is ₹ 80 and its demand is 200 unit. If the price decreases to ₹ 40 then the demand increases to 250 units.

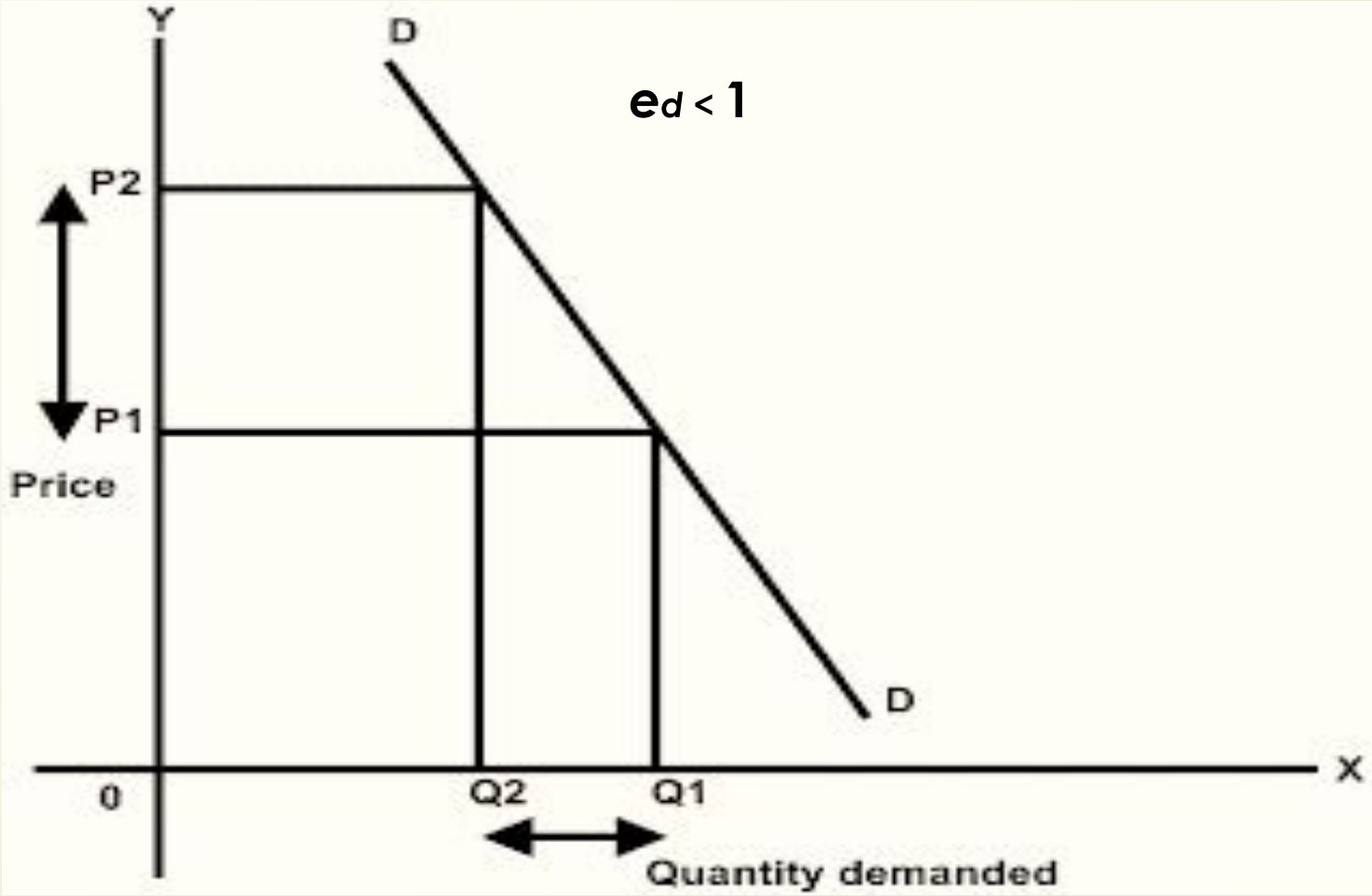
Price Elasticity of Demand $e_d = \frac{\Delta QP}{\Delta PQ}$

$$e_d = \frac{+25\%}{-50\%}$$

$$e_d = 0.5$$

$$\therefore \ e_d < 1$$

- It is shown by a Steeper demand curve


Y
D
$e_d < 1$
P2
P1
Price
D
X
0
Q2
Q1
Quantity demanded

- **Unitary Elastic Demand: $e_d = 1$**

When the change in the demand for the commodity is exactly the same as proportionate change in its price, then the demand for commodity is said to be unitary elastic. Value of such type of demand would be equals to one.

- It is mathematically expressed as $e_d = 1$

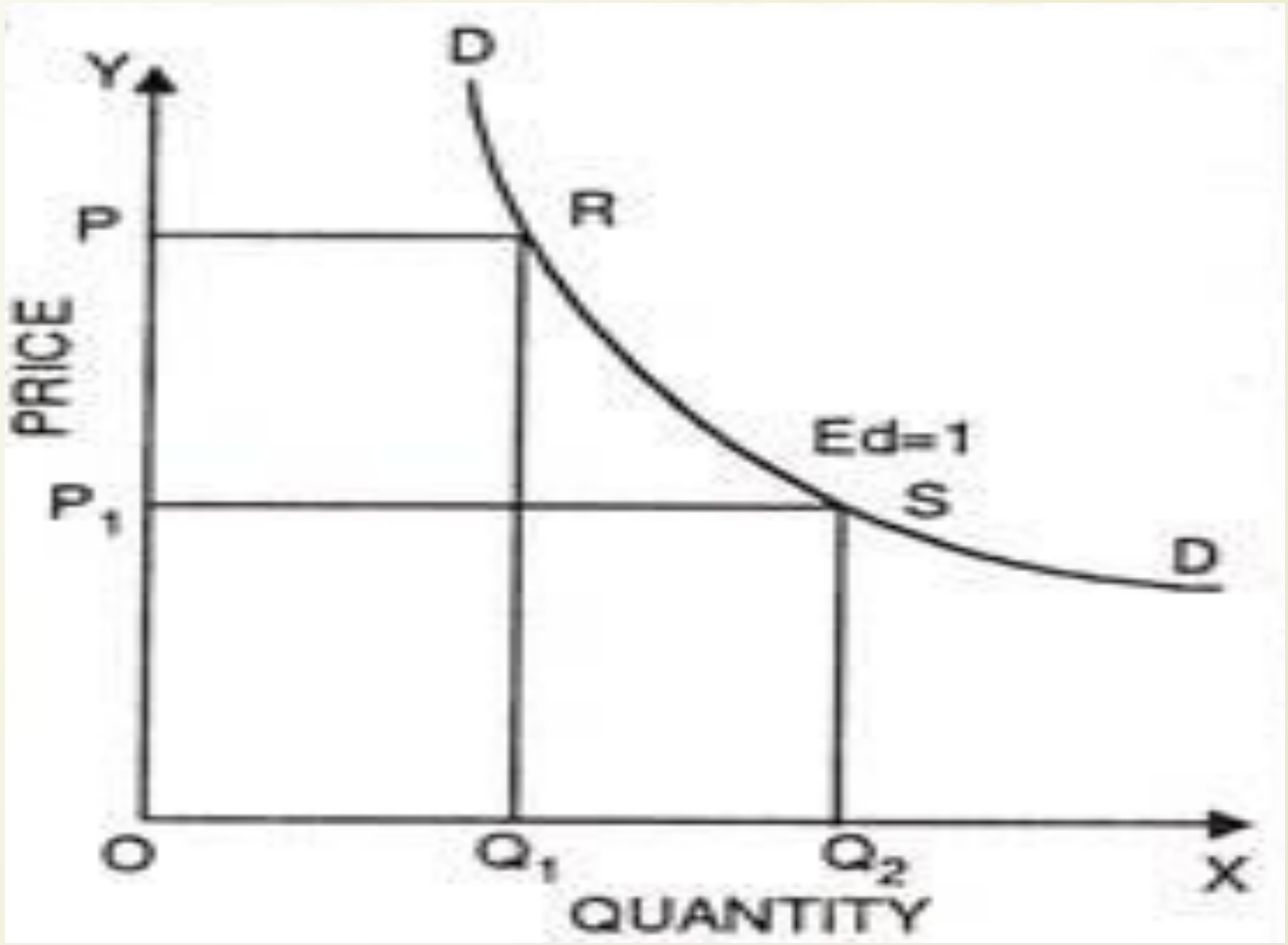
e.g. When the price of commodity X is ₹ 80 the demand is 200 unit. If the price decreases to ₹ 40 then the demand increases to 400 units.

Price Elasticity of Demand $e_d = \frac{\Delta QP}{\Delta PQ}$

$$e_d = \frac{+50\%}{-50\%}$$

$$e_d = 1$$

- In this case, demand curve would be a rectangular hyperbola


Y
D
P
R
PRICE
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P1
S
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Q1
Q2
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QUANTITY