STD – 9 MATHS

CHAPTER - 2

polynomials

**EXERCISE - 2.4 Q:3,4** 

## 3. Find the value of k, if x - 1 is a factor of p(x) in each of the following cases:

(i) 
$$p(x) = x^2 + x + k$$

If x - 1 is a factor of p(x), then p(1) = 0
By Factor Theorem

$$\Rightarrow (1)^2 + (1) + k = 0$$

$$\Rightarrow$$
 1 + 1 + k = 0

$$\Rightarrow$$
 2 + k = 0

$$\Rightarrow$$
 k = -2

(ii) 
$$p(x) = 2x^2 + kx + \sqrt{2}$$

 $\triangleright$  If x - 1 is a factor of p(x), then p(1) = 0

$$\Rightarrow$$
 2(1)<sup>2</sup> + k(1) +  $\sqrt{2}$  = 0

$$\Rightarrow 2 + k + \sqrt{2} = 0$$

$$\Rightarrow k = -(2 + \sqrt{2})$$

(iii) 
$$p(x) = kx^2 - \sqrt{2}x + 1$$

If x - 1 is a factor of p(x), then p(1) = 0
By Factor Theorem

$$\Rightarrow k(1)^2 - \sqrt{2}(1) + 1 = 0$$

$$\Rightarrow$$
 k =  $\sqrt{2}$  - 1

(iv) 
$$p(x) = kx^2 - 3x + k$$

 $\triangleright$  If x-1 is a factor of p(x), then p(1) = 0

### **By Factor Theorem**

$$K(1)^2 - 3(1) + k = 0$$

$$\Rightarrow$$
 k - 3 + k = 0

$$\Rightarrow$$
 2k - 3 = 0

$$\Rightarrow \mathbf{k} = \frac{3}{2}$$

#### 4. Factorize:

- (i)  $12x^2 7x + 1$
- > Using the splitting the middle term method,
- ➤ We have to find a number whose sum = -7 and product = 1 × 12 = 12
- > We get -3 and -4 as the numbers

$$[-3+-4=-7 \text{ and } -3\times-4=12]$$

$$= 12x^{2} - 7x - 1 = 12x^{2} - 4x - 3x + 1$$

$$= 4x (3x - 1) - 1 (3x - 1)$$

$$= (4x - 1) (3x - 1)$$

(ii) 
$$2x^2 + 7x + 3$$

Using the splitting the middle term method,We have to find a number whose sum = 7 and product

$$= 2 \times 3 = 6$$

> We get 6 and 1 as the numbers

$$[6+1=7 \text{ and } 6\times 1=6]$$

$$2x^{2} + 7x + 3 = 2x^{2} + 6x + 1x + 3$$
$$= 2x (x + 3) + 1 (x + 3)$$
$$= (2x + 1) (x + 3)$$

(iii) 
$$6x^2 + 5x - 6$$

- Using the splitting the middle term method,
- ➤ We have to find a number whose sum= 5 and product

$$= 6x - 6 = -36$$

> We get -4 and 9 as the numbers

$$[-4+9=5 \text{ and } -4 \times 9=-36]$$

$$6x^2 + 5x - 6 = 6x^2 + 9x - 4x - 6$$

$$= 3x (2x + 3) - 2 (2x + 3)$$

$$= (2x + 3) (3x - 2)$$

(iv) 
$$3x^2 - x - 4$$

- > Using the splitting the middle term method,
- ➤ We have to find a number whose sum= 1 and product

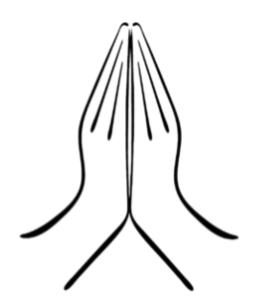
$$= 3x - 4 = -12$$

➤ We get -4 and 3 as the numbers

$$[-4+3=-1 \text{ and } -4\times 3=-12]$$

$$3x^{2} - x - 4 = 3x^{2} - 4x + 3x - 4$$
  
=  $x (3x - 4) + 1 (3x - 4)$   
=  $(3x - 4) (x + 1)$ 

## Thanks



# For watching