STD – 9 MATHS

CHAPTER - 2

polynomials

EXERCISE - 2.4 Q:5(1,2)

5. Factorize:

(i)
$$x^3 - 2x^2 - x + 2$$

$$\triangleright$$
 Let p(x) = x² - 2x² - x + 2

Factors of 2 are ±1 and ± 2

Now,

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

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

$$= -1 - 2 + 1 + 2$$

$$= 0$$

Therefore, (x + 1) is the factor of p(x)

Now, Dividend = Divisor × Quotient + Remainder

$$(x + 1) (x^2 - 3x + 2) = (x + 1) (x^2 - x - 2x + 2)$$

= $(x + 1) (x (x - 1) - 2 (x - 1))$
= $(x + 1) (x - 1) (x + 2)$

(ii)
$$x^3 - 3x^2 - 9x - 5$$

 \triangleright Let p(x) = $x^3 - 3x^2 - 9x - 5$

Factors of 5 are ±1 and ±5

By trial method, we find that

$$p(5)=0$$

So, (x - 5) is factor of p(x)

Now,

$$p(x) = x^{3} - 3x^{2} - 9x - 5$$

$$p(5) = (5)^{3} - 3(5)^{2} - 9(5) - 5$$

$$= 125 - 75 - 45 - 5$$

$$= 0$$

Therefore, (x - 5) is the factor of p(x)

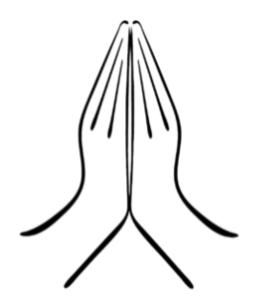
Now, Dividend = Divisor x Quotient + Remainder

$$= (x - 5) (x^{2} + 2x + 1) = (x - 5) (x^{2} + x + x + 1)$$

$$= (x - 5) (x (x + 1) + 1 (x + 1))$$

$$= (x - 5) (x + 1) (x + 1)$$

Thanks



For watching