STD – 9 MATHS

CHAPTER - 2

polynomials

EXERCISE - 2.4 Q : 5(3,4)

(iii) $x^3 + 13x^2 + 32x + 20$

- Let $p(x) = x^3 + 13x^2 + 32x + 20$
- Factors of 20 are ± 1, ± 2, ± 4, ± 5, ± 10 and ± 20
- By trial method, we find that

  $p(-1) = 0$
- So, $(x + 1)$ is factor of $p(x)$

Now,

$p(x) = x^3 + 13x^2 + 32x + 20$

$p(-1) = (-1)^3 + 13(-1)^2 + 32(-1) + 20$

$= -1 + 13 - 32 + 20$

$= 0$

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

$$x + 1 \overline{)\, x^3 + 13x^2 + 32x + 20 \,} \quad x^2 - 12x + 20$$

$$x^3 + x^2$$

$$- \quad -$$

$$12x^2 + 32x + 20$$

$$12x^2 + 12x$$

$$- \quad -$$

$$20x + 20$$

$$20x + 20$$

$$- \quad -$$

$$0$$

Now, Dividend = Divisor × Quotient + Remainder

$(x + 1)(x^2 + 12x + 20)$

$= (x + 1)(x^2 + 2x + 10x + 20)$

$= (x + 1)\, x\, (x + 2) + 10\,(x + 2)$

$= (x + 1)(x + 2)(x + 10)$

(iv) $2y^3 + y^2 - 2y - 1$

➢ Let $p(y) = 2y^3 + y^2 - 2y - 1$

Factors $= 2 \times (-1) = -2$ are ± 1 and ± 2

By trial method, we find that

$p(1) = 0$

So, $(y - 1)$ is factor of $p(y)$

Now,

$$p(y) = 2y^3 + y^2 - 2y - 1$$

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

$$= 2 + 1 - 2$$

$$= 0$$

Therefore, (y-1) is the factor of p(y)

$$
\begin{array}{r|l}
y - 1 & 2y^2 + 3y + 1 \\
\hline
\sqrt{} & 2y^3 + y^2 - 2y - 1 \\
& \underline{2y^3 - 2y^2} \quad (-\ +) \\
& 3Y^2 - 2y - 1 \\
& \underline{3Y^2 - 3Y} \quad (-\ +) \\
& Y - 1 \\
& \underline{Y - 1} \quad (-\ +) \\
& 0
\end{array}
$$

Now, Dividend = Divisor × Quotient + Remainder

$(y - 1)(2y^2 + 3y + 1)$

$= (y - 1)(2y^2 + 2y + y + 1)]$

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

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

Thanks

For watching