



Factorisation of Polynomials Ex 6.5 Q1

Answer :

Let $f(x) = x^3 + 6x^2 + 11x + 6$ be the given polynomial.

Now, put the $x = -1$, we get

$$\begin{aligned} f(-1) &= (-1)^3 + 6(-1)^2 + 11(-1) + 6 \\ &= -1 + 6 - 11 + 6 \\ &= -12 + 12 \\ &= 0 \end{aligned}$$

Therefore, $(x + 1)$ is a factor of $f(x)$.

Now,

$$f(x) = x^3 + 5x^2 + x^2 + 5x + 6x + 6$$

$$\begin{aligned} f(x) &= x^2(x + 1) + 5x(x + 1) + 6(x + 1) \\ &= (x + 1)\{x^2 + 5x + 6\} \\ &= (x + 1)\{x^2 + 3x + 2x + 6\} \\ &= (x + 1)(x + 2)(x + 3) \end{aligned}$$

Hence, $(x + 1)(x + 2)(x + 3)$ are the factors of $f(x)$.

Factorisation of Polynomials Ex 6.5 Q2

Answer :

Let $f(x) = x^3 + 2x^2 - x - 2$ be the given polynomial.

Now, put the $x = -1$, we get

$$f(-1) = -1 + 2 - 1 - 2 = 0$$

Therefore, $(x + 1)$ is a factor of polynomial $f(x)$.

Now, $x^3 + 2x^2 - x - 2$ can be written as,

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

$$\begin{aligned} f(x) &= x^2(x + 1) + 3x(x + 1) + 2(x + 1) \\ &= (x + 1)\{x^2 + 3x + 2\} \\ &= (x + 1)(x + 1)(x + 2) \end{aligned}$$

Hence, $(x + 1)(x + 1)(x + 2)$ are the factors of the polynomial $f(x)$.

Factorisation of Polynomials Ex 6.5 Q3

Answer :

Let $f(x) = x^3 - 6x^2 + 3x + 10$ be the given polynomial.

Now, putting $x = -1$, we get

$$\begin{aligned} f(-1) &= (-1)^3 - 6(1)^2 + 3(-1) + 10 \\ &= -1 - 6 - 3 + 10 \\ &= -10 + 10 \\ &= 0 \end{aligned}$$

Therefore, $(x + 1)$ is a factor of polynomial $f(x)$.

Now,

$$f(x) = x^3 - 6x^2 + 3x + 10$$

$$\begin{aligned} f(x) &= x^2(x + 1) - 7x(x + 1) + 10(x + 1) \\ &= (x + 1)\{x^2 - 7x + 10\} \\ &= (x + 1)\{x^2 - 5x - 2x + 10\} \\ &= (x + 1)(x - 5)(x - 2) \end{aligned}$$

Hence, $(x + 1)$, $(x - 2)$ and $(x - 5)$ are the factors of the polynomial $f(x)$.

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