Factorisation of Polynomials Ex 6.5 Q15

**Answer :**

Let $f(x)=x^3-3x^2-9x-5$ be the given polynomial.

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

$$f(-1)=(-1)^3-3(-1)^2-9(-1)-5$$
$$=-1-3+9-5=-9+9=0$$

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

Now,

$$f(x)=x^2(x+1)-4x(x+1)-5(x+1)$$
$$=(x+1)\{x^2-4x-5\}$$
$$=(x+1)\{x^2-5x+x-5\}$$
$$=(x+1)(x+1)(x-5)$$

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

Factorisation of Polynomials Ex 6.5 Q16

**Answer :**

Let $f(y)=2y^3+y^2-2y-1$ be the given polynomial.

Now, putting $y=1$, we get

$$f(1)=2(1)^3+(1)^2-2(1)-1=2+1-2-1$$
$$=3-3=0$$

Now,

$$f(y)=2y^2(y-1)+3y(y-1)+1(y-1)$$
$$=(y-1)\{2y^2+3y+1\}$$
$$=(y-1)\{2y^2+2y+y+1\}$$
$$=(y-1)(2y+1)(y+1)$$

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

Factorisation of Polynomials Ex 6.5 Q17

**Answer :**

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

Now, putting $x=1$, we get

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

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

Now,

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

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

Factorisation of Polynomials Ex 6.5 Q18

**Answer :**

(i) Let $f(x)=x^3+13x^2+31x-45$ be the given polynomial.

Therefore $(x+9)$ is a factor of the polynomial $f(x)$.

Now,

$$\begin{aligned} f(x) &= x^2(x+9)+4x(x+9)-5(x+9) \\ &= (x+9)\{x^2+4x-5\} \\ &= (x+9)\{x^2+5x-x-5\} \\ &= (x+9)(x-1)(x+5) \end{aligned}$$

Hence $(x-1)$, $(x+5)$ *and* $(x+9)$ are the factors of polynomial f($x$).

(ii) Let $f(x)=4x^3+20x^2+33x+18$ be the given polynomial.

Therefore $(2x+3)$ is a factor of the polynomial $f(x)$.

Now,

$$\begin{aligned} f(x) &= 2x^2(2x+3)+7x(2x+3)+6(2x+3) \\ &= (2x+3)\{2x^2+7x+6\} \\ &= (2x+3)\{2x^2+4x+3x+6\} \\ &= (2x+3)(2x+3)(x+2) \end{aligned}$$

Hence $(x+2),(2x+3)$ *and* $(2x+3)$ are the factors of polynomial f($x$).

********** END **********