Factorisation of Polynomials Ex 6.5 Q8

Answer :

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

Now, putting $x = 1$, we get

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

$\qquad = 3 - 1 - 3 + 1 = 0$

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

Now,

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

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

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

$\qquad = (x-1)(x+1)(3x-1)$

Hence $(x-1), (x+1) \text{ and } (3x-1)$ are the factors of polynomial $f(x)$.

Factorisation of Polynomials Ex 6.5 Q9

Answer :

Let $f(x) = x^3 - 23x^2 + 142x - 120$ be the given polynomial.

Now, putting $x = 1$, we get

$f(1) = (1)^3 - 23(1)^2 + 142(1) - 120$

$\qquad = 1 - 23 + 142 - 120$

$\qquad = 143 - 143 = 0$

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

Now,

$f(x) = x^2(x-1) - 22x(x-1) + 120(x-1)$

$\qquad = (x-1)\{x^2 - 22x + 120\}$

$\qquad = (x-1)\{x^2 - 12x - 10x + 120\}$

$\qquad = (x-1)(x-10)(x-12)$

Hence $(x-1), (x-10) \text{ and } (x-12)$ are the factors of polynomial $f(x)$.

Factorisation of Polynomials Ex 6.5 Q10

Answer :

Let $f(y) = y^3 - 7y + 6$ be the given polynomial.

Now, putting $y = 1$, we get

$f(y) = (1)^3 - 7(1) + 6 = 1 - 7 + 6$

$\qquad = 7 - 7 = 0$

Therefore, $(y-1)$ is a factor of polynomial $f(y)$.

Now,

$f(y) = y^2(y-1) + y(y-1) - 6(y-1)$

$\qquad = (y-1)\{y^2 + y - 6\}$

$\qquad = (y-1)\{y^2 + 3y - 2y - 6\}$

$\qquad = (y-1)(y+2)(y+3)$

Hence $(y-1)$, $(y-2)$ *and* $(y+3)$ are the factors of polynomial $f(y)$.

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