Factorisation of Polynomials Ex 6.2 Q5

Answer :

The given polynomial is

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

If $x = 0$ is zeros of the polynomial $f(x)$, then f(0) = 0

$$2\times(0)^3 - 3\times(0)^2 + a\times 0 + b = 0$$
$$0 - 0 + 0 + b = 0$$
$$\boxed{b = 0} \qquad \ldots\ldots(1)$$

Similarly, if $x = -1$ is the zeros of the polynomial of $f(x)$,

Then, $f(-1) = 0$

$$2\times(-1)^3 - 3\times(-1)^2 + a\times(-1) + b = 0$$
$$-2 - 3 - a + b = 0$$
$$-5 - a + b = 0$$

Putting the value of b from equation (1)

$$-5 - a + 0 = 0$$
$$\boxed{a = -5}$$

Thus,

$$\boxed{\begin{matrix} a = -5, \\ b = 0 \end{matrix}}$$

Factorisation of Polynomials Ex 6.2 Q6

Answer :

The given polynomial is

$f(x) = x^3 + 6x^2 + 11x + 6$

Here, $f(x)$ is a polynomial with integer coefficient and the coefficient of highest degree term is 1. So, the integer roots of $f(x)$ are factors of 6. Which are $\pm 1, \pm 2, \pm 3, \pm 6$ by observing.

$$f(-1) = (-1)^3 + 6\times(-1)^2 + 11(-1) + 6$$
$$= -1 + 6 - 11 + 6$$
$$= -12 + 12$$
$$= 0$$

Also,

$$f(-2) = (-2)^3 + 6(-2)^2 + 11(-2) + 6$$
$$= -8 + 6\times 4 - 22 + 6$$
$$= -8 + 24 - 22 + 6$$
$$= 30 - 30$$
$$= 0$$

And similarly,

$f(-3) = 0$

Therefore, the integer roots of the polynomial $f(x)$ are $-1, -2, -3$

Factorisation of Polynomials Ex 6.2 Q7

Answer :

The given polynomial is

$f(x)=2x^3+x^2-7x-6$

f(x) is a cubic polynomial with integer coefficients. If bc is rational root in lowest terms, then the values of b are limited

to the factors of 6 which are ±1,±2,±3,±6 and the values of c are limited to the factor of 2 as ±1,±2. Hence, the possible

rational roots are ±1,±2,±3,±6,±12,±32 .

Since, $f(2)=2\cdot 2^3+2^2-7.2-6=0$

So, 2 is a root of the polynomial $f(x)=2x^3+x^2-7x-6$

Now, the polynomial can be written as,

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

Also,

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

Therefore,

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

Hence, the rational roots of the polynomial $f(x)=2x^3+x^2-7x-6$ are 2, – 3/2 and – 1.

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