Factorisation of Algebraic Expressions Ex 5.1 Q28

Answer :

The given expression to be factorized is

$21x^2 - 2x + \frac{1}{21}$

This can be written in the form

$$21x^2 - 2x + \frac{1}{21} = (\sqrt{21}x)^2 - 2x + (\frac{1}{\sqrt{21}})^2$$

$$= (\sqrt{21}x)^2 - 2.\sqrt{21}x.\frac{1}{\sqrt{21}} + (\frac{1}{\sqrt{21}})^2$$

$$= (\sqrt{21}x - \frac{1}{\sqrt{21}})^2$$

We cannot further factorize the expression.

So, the required factorization of $21x^2 - 2x + \frac{1}{21}$ is $\boxed{(\sqrt{21}x - \frac{1}{\sqrt{21}})^2}$.

Factorisation of Algebraic Expressions Ex 5.1 Q29

Answer :

The given expression to be factorized is

$5\sqrt{5}x^2 + 20x + 3\sqrt{5}$

This can be written in the form

$$5\sqrt{5}x^2 + 20x + 3\sqrt{5} = 5\sqrt{5}x^2 + (15+5)x + 3\sqrt{5}$$

$$= 5\sqrt{5}x^2 + 15x + 5x + 3\sqrt{5}$$

Take common $5x$ from the first two terms and $\sqrt{5}$ from the last two terms,

$5\sqrt{5}x^2 + 20x + 3\sqrt{5} = 5x(\sqrt{5}x + 3) + \sqrt{5}(\sqrt{5}x + 3)$

Finally take common $(\sqrt{5}x + 3)$ from the above expression,

$5\sqrt{5}x^2 + 20x + 3\sqrt{5} = (\sqrt{5}x + 3)(5x + \sqrt{5})$

We cannot further factorize the expression.

So, the required factorization of $5\sqrt{5}x^2 + 20x + 3\sqrt{5}$ is $\boxed{(\sqrt{5}x + 3)(5x + \sqrt{5})}$.

Factorisation of Algebraic Expressions Ex 5.1 Q30

Answer :

The given expression to be factorized is

$2x^2+3\sqrt{5}x+5$

This can be written in the form

$$2x^2+3\sqrt{5}x+5 = 2x^2+(2\sqrt{5}+\sqrt{5})x+5$$
$$= 2x^2+2\sqrt{5}x+\sqrt{5}x+5$$

Take common $2x$ from the first two terms and $\sqrt{5}$ from the last two terms,

$$2x^2+3\sqrt{5}x+5 = 2x(x+\sqrt{5})+\sqrt{5}(x+\sqrt{5})$$

Finally take common $(x+\sqrt{5})$ from the above expression,

$$2x^2+3\sqrt{5}x+5 = (x+\sqrt{5})(2x+\sqrt{5})$$

We cannot further factorize the expression.

So, the required factorization of $2x^2+3\sqrt{5}x+5$ is $\boxed{(x+\sqrt{5})(2x+\sqrt{5})}$.

Factorisation of Algebraic Expressions Ex 5.1 Q31

Answer :

The given expression to be factorized is

$9(2a-b)^2-4(2a-b)-13$

Substituting $x=(2a-b)$ in the above expression, we get

$9(2a-b)^2-4(2a-b)-13 = 9x^2-4x-13$

This can be written in the form

$9x^2-4x-13 = 9x^2-13x+9x-13$

Take common x from the first two terms and 1 from the last two terms,

$9(2a-b)^2-4(2a-b)-13 = x(9x-13)+1(9x-13)$

Finally take common $(9x-13)$ from the above expression,

$9(2a-b)^2-4(2a-b)-13 = (9x-13)(x+1)$

Put $x=(2a-b)$,

$$9(2a-b)^2-4(2a-b)-13 = \{9(2a-b)-13\}\{(2a-b)+1\}$$
$$= \{(18a-9b)-13\}\{(2a-b)+1\}$$
$$= (18a-9b-13)(2a-b+1)$$

We cannot further factorize the expression.

So, the required factorization of $9(2a-b)^2-4(2a-b)-13$ is $\boxed{(18a-9b-13)(2a-b+1)}$.

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