



Factorisation of Algebraic Expressions Ex 5.3 Q6

Answer :

The given expression to be factorized is $x^3 + 8y^3 + 6x^2y + 12xy^2$

This can be written in the form

$$x^3 + 8y^3 + 6x^2y + 12xy^2 = (x)^3 + (2y)^3 + 6x^2y + 12xy^2$$

Take common $6xy$ from the last two terms. Then we get

$$x^3 + 8y^3 + 6x^2y + 12xy^2 = (x)^3 + (2y)^3 + 6xy(x + 2y)$$

This can be written in the following form

$$x^3 + 8y^3 + 6x^2y + 12xy^2 = (x)^3 + (2y)^3 + 3 \cdot x \cdot 2y(x + 2y)$$

Recall the formula for the cube of the sum of two numbers

$$(a + b)^3 = a^3 + b^3 + 3ab(a + b)$$

Using the above formula, we have

$$x^3 + 8y^3 + 6x^2y + 12xy^2 = (x + 2y)^3$$

We cannot further factorize the expression.

So, the required factorization is of $x^3 + 8y^3 + 6x^2y + 12xy^2$ is $(x + 2y)^3$.

Factorisation of Algebraic Expressions Ex 5.3 Q7

Answer :

The given expression to be factorized is $8x^3 + y^3 + 12x^2y + 6xy^2$

This can be written in the form

$$8x^3 + y^3 + 12x^2y + 6xy^2 = (2x)^3 + (y)^3 + 12x^2y + 6xy^2$$

Take common $6xy$ from the last two terms. Then we get

$$8x^3 + y^3 + 12x^2y + 6xy^2 = (2x)^3 + (y)^3 + 6xy(2x + y)$$

This can be written in the following form

$$8x^3 + y^3 + 12x^2y + 6xy^2 = (2x)^3 + (y)^3 + 3 \cdot 2x \cdot y(2x + y)$$

Recall the formula for the cube of the sum of two numbers

$$(a + b)^3 = a^3 + b^3 + 3ab(a + b)$$

Using the above formula, we have

$$8x^3 + y^3 + 12x^2y + 6xy^2 = (2x + y)^3$$

We cannot further factorize the expression.

So, the required factorization is of $8x^3 + y^3 + 12x^2y + 6xy^2$ is $(2x + y)^3$.

Factorisation of Algebraic Expressions Ex 5.3 Q8

Answer :

The given expression to be factorized is $8a^3 + 27b^3 + 36a^2b + 54ab^2$

This can be written in the form

$$8a^3 + 27b^3 + 36a^2b + 54ab^2 = (2a)^3 + (3b)^3 + 36a^2b + 54ab^2$$

Take common $18ab$ from the last two terms. Then we get

$$8a^3 + 27b^3 + 36a^2b + 54ab^2 = (2a)^3 + (3b)^3 + 18ab(2a + 3b)$$

This can be written in the following form

$$8a^3 + 27b^3 + 36a^2b + 54ab^2 = (2a)^3 + (3b)^3 + 3 \cdot 2a \cdot 3b(2a + 3b)$$

Recall the formula for the cube of the sum of two numbers $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$

Using the above formula, we have $8a^3 + 27b^3 + 36a^2b + 54ab^2 = (2a + 3b)^3$

We cannot further factorize the expression.

So, the required factorization is of $8a^3 + 27b^3 + 36a^2b + 54ab^2$ is $(2a + 3b)^3$.

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