



### Factorisation of Algebraic Expressions Ex 5.3 Q9

**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 difference 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  $\boxed{(2a - 3b)^3}$ .

### Factorisation of Algebraic Expressions Ex 5.3 Q10

**Answer :**

The given expression to be factorized is  $x^3 - 12x(x - 4) - 64$

This can be written in the form

$$x^3 - 12x(x - 4) - 64 = x^3 - 12x^2 + 48x - 64$$

$$= x^3 - 64 - 12x^2 + 48x$$

$$= (x)^3 - (4)^3 - 12x^2 + 48x$$

Take common  $-12x$  from the last two terms. Then we get  $x^3 - 12x(x - 4) - 64 = (x)^3 - (4)^3 - 12x(x - 4)$

This can be written in the following form  $x^3 - 12x(x - 4) - 64 = (x)^3 - (4)^3 - 3 \cdot x \cdot 4(x - 4)$

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

Using the above formula, we have  $x^3 - 12x(x - 4) - 64 = (x - 4)^3$

We cannot further factorize the expression.

So, the required factorization is of  $x^3 - 12x(x - 4) - 64$  is  $\boxed{(x - 4)^3}$ .

### Factorisation of Algebraic Expressions Ex 5.3 Q11

**Answer :**

The given expression to be factorized is  $a^3x^3 - 3a^2bx^2 + 3ab^2x - b^3$

This can be written in the form

$$a^3x^3 - 3a^2bx^2 + 3ab^2x - b^3 = a^3x^3 - b^3 - 3a^2bx^2 + 3ab^2x$$

$$= (ax)^3 - (b)^3 - 3a^2bx^2 + 3ab^2x$$

Take common  $-3abx$  from the last two terms. Then we get  $a^3x^3 - 3a^2bx^2 + 3ab^2x - b^3$

$$= (ax)^3 - (b)^3 - 3abx(ax - b)$$

This can be written in the following form  $a^3x^3 - 3a^2bx^2 + 3ab^2x - b^3 = (ax)^3 - (b)^3 - 3 \cdot ax \cdot b(ax - b)$

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

Using the above formula, we have  $a^3x^3 - 3a^2bx^2 + 3ab^2x - b^3 = (ax - b)^3$

We cannot further factorize the expression.

So, the required factorization is of  $a^3x^3 - 3a^2bx^2 + 3ab^2x - b^3$  is  $\boxed{(ax - b)^3}$ .

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