Factorisation of Algebraic Expressions Ex 5.2 Q7

Answer:

The given expression to be factorized is

$10x^4y - 10xy^4$

Take common $10xy$ from the two terms,. Then we have

$10x^4y - 10xy^4 = 10xy(x^3 - y^3)$

This can be written in the form

$10x^4y - 10xy^4 = 10xy\{(x)^3 - (y)^3\}$

Recall the formula for difference of two cubes

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

Using the above formula, we have

$10x^4y - 10xy^4 = 10xy\{(x-y)(x^2 + xy + y^2)\}$
$= 10xy(x-y)(x^2 + xy + y^2)$

We cannot further factorize the expression.

So, the required factorization of $10x^4y - 10xy^4$ is $\boxed{10xy(x-y)(x^2 + xy + y^2)}$.

Factorisation of Algebraic Expressions Ex 5.2 Q8

Answer:

The given expression to be factorized is

$54x^6y + 2x^3y^4$

Take common $2x^3y$ from the two terms,. Then we have

$54x^6y + 2x^3y^4 = 2x^3y(27x^3 + y^3)$

This can be written in the form

$54x^6y + 2x^3y^4 = 2x^3y\{(3x)^3 + (y)^3\}$

Recall the formula for sum of two cubes

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

Using the above formula, we have

$54x^6y + 2x^3y^4 = 2x^3y\{(3x)^3 + (y)^3\}$
$= 2x^3y(3x + y)\{(3x)^2 - 3x.y + (y)^2\}$
$= 2x^3y(3x + y)(9x^2 - 3xy + y^2)$

We cannot further factorize the expression.

So, the required factorization of $54x^6y + 2x^3y^4$ is $\boxed{2x^3y(3x + y)(9x^2 - 3xy + y^2)}$.

Factorisation of Algebraic Expressions Ex 5.2 Q9

Answer :

The given expression to be factorized is

$32a^3 + 108b^3$

Take common 4 from the two terms,. Then we have

$32a^3 + 108b^3 = 4(8a^3 + 27b^3)$

This can be written in the form

$32a^3 + 108b^3 = 4\{(2a)^3 + (3b)^3\}$

Recall the formula for sum of two cubes

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

Using the above formula, we have

$32a^3 + 108b^3 = 4\{(2a)^3 + (3b)^3\}$

$= 4(2a + 3b)\{(2a)^2 - 2a.3b + (3b)^2\}$

$= 4(2a + 3b)(4a^2 - 6ab + 9b^2)$

We cannot further factorize the expression.

So, the required factorization of $32a^3 + 108b^3$ is $\boxed{4(2a + 3b)(4a^2 - 6ab + 9b^2)}$.