Factorisation of Algebraic Expressions Ex 5.2 Q16

Answer :

The given expression to be factorized is

$x^3y^3 + 1$

This can be written as

$x^3y^3 + 1 = (xy)^3 + (1)^3$

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

$= (xy + 1)\{(xy)^2 - xy.1 + (1)^2\}$

$= (xy + 1)(x^2y^2 - xy + 1)$

We cannot further factorize the expression.

So, the required factorization of $x^3y^3 + 1$ is $\boxed{(xy+1)(x^2y^2 - xy + 1)}$.

Factorisation of Algebraic Expressions Ex 5.2 Q17

Answer :

The given expression to be factorized is

$x^4y^4 - xy$

Take common xy. Then we have from the above expression,

$x^4y^4 - xy = xy(x^3y^3 - 1)$

This can be written as

$x^4y^4 - xy = xy\{(xy)^3 - (1)^3\}$

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

$x^4y^4 - xy = xy(xy - 1)\{(xy)^2 + xy.1 + (1)^2\}$

$= xy(xy - 1)(x^2y^2 + xy + 1)$

We cannot further factorize the expression.

So, the required factorization of $x^4y^4 - xy$ is $\boxed{xy(xy-1)(x^2y^2 + xy + 1)}$.

Factorisation of Algebraic Expressions Ex 5.2 Q18

Answer :

The given expression to be factorized is

$a^{12} + b^{12}$

This can be written as

$a^{12} + b^{12} = (a^4)^3 + (b^4)^3$

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

$a^{12} + b^{12} = (a^4 + b^4)\{(a^4)^2 - a^4.b^4 + (b^4)^2\}$

$= (a^4 + b^4)(a^8 - a^4 b^4 + b^8)$

We cannot further factorize the expression.

So, the required factorization of $a^{12} + b^{12}$ is $\boxed{(a^4 + b^4)(a^8 - a^4 b^4 + b^8)}$.

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