



Factorisation of Algebraic Expressions Ex 5.2 Q13

**Answer :**

The given expression to be factorized is

$$8x^2y^3 - x^5$$

Take common  $x^2$ . Then we have

$$8x^2y^3 - x^5 = x^2(8y^3 - x^3)$$

This can be written as

$$8x^2y^3 - x^5 = x^2\{(2y)^3 - (x)^3\}$$

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

$$\begin{aligned} 8x^2y^3 - x^5 &= x^2\{(2y)^3 - (x)^3\} \\ &= x^2(2y - x)(4y^2 + 2yx + x^2) \\ &= x^2(2y - x)(x^2 + 2xy + 4y^2) \end{aligned}$$

We cannot further factorize the expression.

So, the required factorization of  $8x^2y^3 - x^5$  is  $x^2(2y - x)(x^2 + 2xy + 4y^2)$ .

Factorisation of Algebraic Expressions Ex 5.2 Q14

**Answer :**

The given expression to be factorized is

$$1029 - 3x^3$$

Take common 3. Then we have from the above expression,

$$1029 - 3x^3 = 3(343 - x^3)$$

$$\text{This can be written as } 1029 - 3x^3 = 3\{(7)^3 - (x)^3\}$$

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

$$\begin{aligned} 1029 - 3x^3 &= 3\{(7)^3 - (x)^3\} \\ &= 3(7 - x)\{(7)^2 + 7.x + (x)^2\} \\ &= 3(7 - x)(49 + 7x + x^2) \end{aligned}$$

We cannot further factorize the expression.

So, the required factorization of  $1029 - 3x^3$  is  $3(7 - x)(49 + 7x + x^2)$ .

Factorisation of Algebraic Expressions Ex 5.2 Q15

**Answer :**

The given expression to be factorized is

$$x^6 + y^6$$

This can be written as

$$x^6 + y^6 = (x^2)^3 + (y^2)^3$$

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

$$\begin{aligned} x^6 + y^6 &= (x^2 + y^2)\{(x^2)^2 - x^2 \cdot y^2 + (y^2)^2\} \\ &= (x^2 + y^2)(x^4 - x^2 y^2 + y^4) \end{aligned}$$

We cannot further factorize the expression.

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

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