Algebraic Expressions and Identities Ex 6.3 Q20

Answer :

We have to find the product of the expression in order to express it as a monomial.

To multiply algebraic expressions, we use commutative and associative laws along with the laws of indices, i.e., $a^m \times a^n = a^{m+n}$ and $(a^m)^n = a^{mn}$.

We have:

$$\begin{aligned}&(5x^4) \times (x^2)^3 \times (2x)^2\\&= (5x^4) \times (x^6) \times \left(2^2 \times x^2\right)\\&= \left(5 \times 2^2\right) \times \left(x^4 \times x^6 \times x^2\right)\\&= \left(5 \times 2^2\right) \times \left(x^{4+6+2}\right)\\&= 20x^{12}\end{aligned}$$

$$\therefore (5x^4) \times (x^2)^3 \times (2x)^2 = 20x^{12}$$

Substituting $x = 1$ in LHS, we get:

$$\begin{aligned}\text{LHS} &= (5x^4) \times (x^2)^3 \times (2x)^2\\&= \left(5 \times 1^4\right) \times \left(1^2\right)^3 \times (2 \times 1)^2\\&= (5 \times 1) \times \left(1^6\right) \times (2)^2\\&= 5 \times 1 \times 4\\&= 20\end{aligned}$$

Put $x = 1$ in RHS, we get:

$$\begin{aligned}\text{RHS} &= 20x^{12}\\&= 20 \times (1)^{12}\\&= 20 \times 1\\&= 20\end{aligned}$$

$\because$ LHS = RHS for $x = 1$; therefore, the result is correct.

Thus, the answer is $20x^{12}$.

Algebraic Expressions and Identities Ex 6.3 Q21

Answer :

We have to find the product of the expression in order to express it as a monomial.

To multiply algebraic expressions, we use commutative and associative laws along with the laws of indices, i.e., $a^m \times a^n = a^{m+n}$ and $(a^m)^n = a^{mn}$.

We have:

$$
\begin{aligned}
&(x^2)^3 \times (2x) \times (-4x) \times 5 \\
&= (x^6) \times (2x) \times (-4x) \times 5 \\
&= \{2 \times (-4) \times 5\} \times (x^6 \times x \times x) \\
&= \{2 \times (-4) \times 5\} \times (x^{6+1+1}) \\
&= -40x^8
\end{aligned}
$$

$\therefore (x^2)^3 \times (2x) \times (-4x) \times 5 = -40x^8$

Substituting $x = 1$ in LHS, we get:

$$
\begin{aligned}
\text{LHS} &= (x^2)^3 \times (2x) \times (-4x) \times 5 \\
&= (1^2)^3 \times (2 \times 1) \times (-4 \times 1) \times 5 \\
&= 1^6 \times 2 \times (-4) \times 5 \\
&= 1 \times 2 \times (-4) \times 5 \\
&= -40
\end{aligned}
$$

Putting $x = 1$ in RHS, we get:

$$
\begin{aligned}
\text{RHS} &= -40x^8 \\
&= -40(1)^8 \\
&= -40 \times 1 \\
&= -40
\end{aligned}
$$

$\because$ LHS = RHS for $x = 1$; therefore, the result is correct

Thus, the answer is $-40x^8$.

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