Algebraic Expressions and Identities Ex 6.3 Q28

Answer :

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

We have:

$$\left(\frac{1}{8}x^2y^4\right) \times \left(\frac{1}{4}x^4y^2\right) \times (xy) \times 5$$
$$= \left(\frac{1}{8} \times \frac{1}{4} \times 5\right) \times \left(x^2 \times x^4 \times x\right) \times \left(y^4 \times y^2 \times y\right)$$
$$= \left(\frac{1}{8} \times \frac{1}{4} \times 5\right) \times \left(x^{2+4+1}\right) \times \left(y^{4+2+1}\right)$$
$$= \frac{5}{32}x^7y^7$$

To verify the result, we substitute $x = 1$ and $y = 2$ in LHS; we get:

$$\text{LHS} = \left(\frac{1}{8}x^2y^4\right) \times \left(\frac{1}{4}x^4y^2\right) \times (xy) \times 5$$
$$= \left\{\frac{1}{8} \times (1)^2 \times (2)^4\right\} \times \left\{\frac{1}{4} \times (1)^4 \times (2)^2\right\} \times (1 \times 2) \times 5$$
$$= \left(\frac{1}{8} \times 1 \times 16\right) \times \left(\frac{1}{4} \times 1 \times 4\right) \times (1 \times 2) \times 5$$
$$= 2 \times 1 \times 2 \times 5$$
$$= 20$$

Substituting $x = 1$ and $y = 2$ in RHS, we get:

$$\text{RHS} = \frac{5}{32}x^7y^7$$
$$= \frac{5}{32}(1)^7(2)^7$$
$$= \frac{5}{\cancel{32}} \times 1 \times \cancel{128}^{4}$$
$$= 20$$

Because LHS is equal to RHS, the result is correct.

Thus, the answer is $\frac{5}{32}x^7y^7$.

Algebraic Expressions and Identities Ex 6.3 Q29

Answer :

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

We have:

$$\left(\frac{2}{5}a^2b\right) \times \left(-15b^2ac\right) \times \left(-\frac{1}{2}c^2\right)$$
$$= \left\{\frac{2}{5} \times (-15) \times \left(-\frac{1}{2}\right)\right\} \times (a^2 \times a) \times \left(b \times b^2\right) \times (c \times c^2)$$
$$= \left\{\frac{2}{5} \times (-15) \times \left(-\frac{1}{2}\right)\right\} \times (a^{2+1}) \times \left(b^{1+2}\right) \times (c^{1+2})$$
$$= 3a^3b^3c^3$$

$\because$ The expression doesn't consist of the variables *x* and *y*.

$\therefore$ The result cannot be verified for *x* = 1 and *y* = 2

Thus, the answer is $3a^3b^3c^3$.

Algebraic Expressions and Identities Ex 6.3 Q30

Answer :

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

We have:

$$\left(-\frac{4}{7}a^2b\right) \times \left(-\frac{2}{3}b^2c\right) \times \left(-\frac{7}{6}c^2a\right)$$
$$= \left\{\left(-\frac{4}{7}\right) \times \left(-\frac{2}{3}\right) \times \left(-\frac{7}{6}\right)\right\} \times (a^2 \times a) \times \left(b \times b^2\right) \times (c \times c^2)$$
$$= \left\{\left(-\frac{4}{7}\right) \times \left(-\frac{2}{3}\right) \times \left(-\frac{7}{6}\right)\right\} \times (a^{2+1}) \times \left(b^{1+2}\right) \times (c^{1+2})$$
$$= -\frac{4}{9}a^3b^3c^3$$

$\because$ The expression doesn't consist of the variables *x* and *y*.

$\therefore$ The result cannot be verified for *x* = 1 and *y* = 2.

Thus, the answer is $-\frac{4}{9}a^3b^3c^3$.

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