Exercise 5C

Q12

Answer :

(b) $\frac{-2}{3}$

We have:

$$\left(\frac{-3}{2}\right)^{-1} = \left(\frac{2}{-3}\right)^{1} \qquad \left[since\ \left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^{n}\right]$$

$$= \frac{-2}{3}$$

Q13

Answer :

(d) $\frac{135}{8}$

$$\left(3^2 - 2^2\right) \times \left(\frac{2}{3}\right)^{-3} = (9-4) \times \left(\frac{3}{2}\right)^{3} \qquad \left[since\ \left(\frac{a}{b}\right)^{-1} = \left(\frac{b}{a}\right)^{1}\right]$$

$$= 5 \times \frac{3^3}{2^3} = 5 \times \frac{27}{8} = \frac{135}{8}$$

Q14

Answer :

(a) $\frac{19}{64}$

We have:

$$\left\{\left(\frac{1}{3}\right)^{-3} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-3} = \left\{\left(\frac{3}{1}\right)^{3} - \left(\frac{2}{1}\right)^{3}\right\} \div \left(\frac{4}{1}\right)^{3}$$

$$\left[since\ \left(\frac{a}{b}\right)^{-1} = \left(\frac{b}{a}\right)^{1}\right]$$

$$= \left\{\left(3^3\right) - (2)^3\right\} \div (4)^3$$

$$= (27 - 8) \div 64$$

$$= 19 \div 64$$
$$= 19 \times \frac{1}{64} = \frac{19}{64}$$

Q15

Answer :

(c) $(-5)^5$

We have:

$$\left(\frac{-1}{5}\right)^3 \div \left(\frac{-1}{5}\right)^8 = \left(\frac{-1}{5}\right)^{3-8} \qquad [since\ a^m \div a^n = a^{m-n}]$$
$$= \left(\frac{-1}{5}\right)^{-5}$$
$$= \left(\frac{5}{-1}\right)^5 \qquad \left[Since\ \left(\frac{a}{b}\right)^{-1} = \left(\frac{b}{a}\right)^1\right]$$
$$= \left(\frac{5\times-1}{-1\times-1}\right)^5 = \left(\frac{-5}{1}\right)^5 = (-5)^5$$

Q16

Answer :

(a) $\frac{4}{25}$

$$\left(\frac{-2}{5}\right)^7 \div \left(\frac{-2}{5}\right)^5 = \left(\frac{-2}{5}\right)^{7-5} \qquad [since\ a^m \div a^n = a^{m-n}]$$
$$= \left(\frac{-2}{5}\right)^2$$
$$= \frac{(-2)^2}{(5)^2} = \frac{4}{25}$$

Q17

Answer :

(c) $\frac{4}{9}$

$$\left(\frac{-2}{3}\right)^2 = \frac{-2}{3} \times \frac{-2}{3} = \frac{4}{9}$$

Q18

Answer :

(b) $\frac{-1}{8}$

We have:

$$\left(\frac{-1}{2}\right)^3 = \frac{-1}{2} \times \frac{-1}{2} \times \frac{-1}{2} = \frac{-1}{8}$$

Q19

Answer :

(c) $\frac{3}{4}$

$$\left(\frac{5}{3}\right)^{-5} \times \left(\frac{5}{3}\right)^{11} = \left(\frac{5}{3}\right)^{8x}$$

$$\Rightarrow \left(\frac{5}{3}\right)^{-5+11} = \left(\frac{5}{3}\right)^{8x} \quad [\text{ since } a^m \times a^n = a^{m+n}]$$

$$\Rightarrow \left(\frac{5}{3}\right)^{6} = \left(\frac{5}{3}\right)^{8x}$$

On equating the coefficients:

$6 = 8x$

$\therefore x = \frac{6}{8} = \frac{3}{4}$

Q20

Answer :

(c) $\frac{-4}{5}$

Let the required number be x.

$(-8)^{-1} \times x = (10)^{-1}$

$\Rightarrow \frac{1}{-8} \times x = \frac{1}{10}$

$\therefore x = \frac{1}{10} \times \left(-8\right) = \frac{-4}{5}$

Hence, the required number is $\frac{-4}{5}$.

Q21

Answer :

(c) 2.156×10^6

A given number is said to be in standard form if it can be expressed as $k \times 10^n$, where k is a real number such that $1 \leq k < 10$ and n is a positive integer.

For example: 2.156×10^6

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