Exercise 1E

Q8

Answer :

Let the number be x.

Now,

$$\frac{-33}{8} \div x = \frac{-11}{2}$$

$$\Rightarrow \frac{-33}{8} \times \frac{1}{x} = \frac{-11}{2}$$

$$\Rightarrow \frac{1}{x} = \frac{-11}{2} \div \frac{-33}{8}$$

$$\Rightarrow \frac{1}{x} = \frac{-11}{2} \times \frac{8}{-33}$$

$$\Rightarrow \frac{1}{x} = \frac{88}{66}$$

$$\Rightarrow \frac{1}{x} = \frac{4}{3}$$

$$\Rightarrow x = \frac{3}{4} \qquad \left(\text{Reciprocal of } \frac{4}{3}\right)$$

Q9

Answer :

$$\left(\frac{13}{5}+\frac{-12}{7}\right)\div\left(\frac{-31}{7}\times\frac{1}{-2}\right)$$

$$=\left(\frac{91-60}{35}\right)\div\left(\frac{-31}{-14}\right)$$

$$=\left(\frac{31}{35}\right)\div\left(\frac{31}{14}\right)$$

$$=\left(\frac{31}{35}\right)\times\left(\frac{14}{31}\right)$$

$$=\frac{14}{35}$$

$$=\frac{14\div7}{35\div7}$$

$$=\frac{2}{5}$$

Q10

Answer :

$$\left(\frac{65}{12}+\frac{8}{3}\right)\div\left(\frac{65}{12}-\frac{8}{3}\right)$$

$$=\left(\frac{65}{12}+\frac{32}{12}\right)\div\left(\frac{65}{12}-\frac{32}{12}\right)$$

$$=\left(\frac{97}{12}\right)\div\left(\frac{33}{12}\right)$$

$$=\frac{97}{12}\times\frac{12}{33}$$

$$=\frac{97}{33}$$

Q11

Answer :

(i)

Let $\frac{9}{8} \div x = \frac{-3}{2}$

$\Rightarrow \frac{9}{8} \times \frac{1}{x} = \frac{-3}{2}$

$\Rightarrow \frac{1}{x} = \frac{-3}{2} \div \frac{9}{8}$

$\Rightarrow \frac{1}{x} = \frac{-3}{2} \times \frac{8}{9}$

$\Rightarrow \frac{1}{x} = \frac{-24}{18}$

$\Rightarrow \frac{1}{x} = \frac{-4}{3}$

$\Rightarrow x = \frac{-3}{4}$ $\left[\text{Reciprocal of } \frac{-4}{3}\right]$

(ii)

Let $x \div \left(\frac{-7}{5}\right) = \frac{10}{19}$

$\Rightarrow x \times \left(\frac{5}{-7}\right) = \frac{10}{19}$

$\Rightarrow x = \left(\frac{10}{19}\right) \div \left(\frac{5}{-7}\right)$

$\Rightarrow x = \frac{10}{19} \times \frac{-7}{5}$

$\Rightarrow x = \frac{-14}{19}$

$\left(\text{iii}\right)$

$\text{Let } \mathbf{x} \div \left(-3\right) = \frac{-4}{15}$

$\Rightarrow \mathbf{x} \times \left(\frac{1}{-3}\right) = \frac{-4}{15}$

$\Rightarrow \mathbf{x} = \frac{-4}{15} \times \left(-3\right)$

$\Rightarrow \mathbf{x} = \frac{12}{15}$

$\Rightarrow \mathbf{x} = \frac{4}{5}$

$\left(\text{iv}\right)$

$\text{Let } \left(-12\right) \div \mathbf{x} = \frac{-6}{5}$

$\Rightarrow \left(-12\right) \times \frac{1}{\mathbf{x}} = \frac{-6}{5}$

$\Rightarrow \frac{1}{\mathbf{x}} = \frac{-6}{5} \div \left(-12\right)$

$\Rightarrow \frac{1}{\mathbf{x}} = \frac{-6}{5} \times \frac{1}{-12}$

$\Rightarrow \frac{1}{\mathbf{x}} = \frac{1}{10}$

$\Rightarrow \mathbf{x} = 10$

Q12

Answer :

(i) No, rational numbers are not closed under division in general.

$\frac{a}{0} = \infty$; it is not a rational number.

(ii) No

$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c} = \frac{ad}{bc}$

Also,

$\frac{c}{d} \div \frac{a}{b} = \frac{c}{d} \times \frac{b}{a} = \frac{cb}{da}$ **Thus,** $\frac{a}{b} \div \frac{c}{d} \neq \frac{c}{d} \div \frac{a}{b}$

Therefore, division is not commutative.

(iii) No, rational numbers are not associative under division.

$\frac{a}{b} \div \left(\frac{c}{d} \div \frac{e}{f}\right) \neq \left(\frac{a}{b} \div \frac{c}{d}\right) \div \frac{e}{f}$

(iv) No, we cannot divide 1 by 0. The answer will be∞, which is not defined.

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