

Ex - 1.1

Q1. Is zero a rational number? Can you write it in the form p/q , where p and q are integers and $q \neq 0$?

Sol. Yes, zero is a rational number. We can write zero in the form p/q whose p and q are integers and $q \neq 0$.

so, 0 can be written as $\frac{0}{1} = \frac{0}{2} = \frac{0}{3}$ etc.

Q2. Find six rational numbers between 3 and 4.

Sol. First rational number between 3 and 4 is $= \frac{3+4}{2} = \frac{7}{2}$

Similarly other numbers

$$3 + \frac{7}{2} = \frac{13}{2}$$

$$3 + \frac{13}{4} = \frac{25}{4}$$

$$3 + \frac{25}{8} = \frac{49}{8}$$

$$3 + \frac{49}{16} = \frac{97}{16}$$

$$\frac{97}{32} + 3 = \frac{193}{32}$$

So, numbers are

$$\frac{7}{2}, \frac{13}{4}, \frac{25}{8}, \frac{49}{16}, \frac{97}{32}, \frac{193}{64}$$

Q3. Find five rational numbers between $3/5$ and $4/5$.

Sol. Let $a = \frac{3}{5}$ $b = \frac{4}{5}$ $n = 5$

$$\text{then, } d = \frac{b-a}{n+1} = \frac{\frac{4}{5} - \frac{3}{5}}{5+1} = \frac{1}{30}$$

So, rational numbers are

$$\frac{3}{5} + \frac{1}{30} = \frac{19}{30}$$

$$\frac{3}{5} + \frac{2}{30} = \frac{20}{30}$$

$$\frac{3}{5} + \frac{3}{30} = \frac{21}{30}$$

$$\frac{3}{5} + \frac{4}{30} = \frac{22}{30}$$

$$\frac{3}{5} + \frac{5}{30} = \frac{23}{30}$$

Thus, numbers are

$$\frac{19}{30}, \frac{20}{30}, \frac{21}{30}, \frac{22}{30}, \frac{23}{30}$$

Q4. State whether the following statements are true or false? Give reasons for your answers.

- (i) Every natural number is a whole number.
- (ii) Every integer is a whole number.
- (iii) Every rational number is a whole number.

Sol. (i) True, the collection of whole numbers contains all natural numbers.

(ii) False, -2 is not a whole number

(iii) False, $\frac{1}{2}$ is a rational number but not a whole number.