

IX Test - 1

Time: 30min

1) Which of the following is irrational?

(1) (a) 0.14 (b) $0.14\overline{16}$ (c) $0.\overline{1416}$ (d) $0.401400140001\dots$

2) $1.272727\dots$ can be expressed in rational form as

(1) (a) $\frac{14}{99}$ (b) $\frac{14}{11}$ (c) $\frac{11}{14}$ (d) $\frac{99}{14}$

(1) 3) The value of $2.\overline{6} - 0.\overline{9}$ is (a) $\frac{4}{3}$ (b) $\frac{1}{3}$ (c) $\frac{5}{3}$ (d) $\frac{7}{3}$

4) If $0.142857142857\dots$ express in the form of

(1) $\frac{m}{n}$, then the value of $(2m+n)$ is (a) 1 (b) 2 (c) 7 (d) 9

(2) 5) What is the nature of the number $-5 + 2\sqrt{5} - \sqrt{5}$?

6) State True or False. Justify your answer.

(1) (i) Every real number is either rational or an irrational

(1) (ii) π is irrational and $\frac{22}{7}$ is rational

(1) (iii) The product of a rational and an irrational number is always irrational.

(3) 7) Insert a rational and an irrational number between 0.15 and 0.16.

(3) 8) Find the sum of $2.\overline{3}$ and $4.\overline{15}$

IX Test - 1 (Answers)

1) $0.401400140001\dots$ (d)

[the decimal expansion is non-terminating non-repeating.]

2) Let $x = 1.\overline{27}2727\dots \rightarrow (1)$

$100x = 127.\overline{27}2727\dots \rightarrow (2)$

$(2)-(1), 99x = 126$

$x = \frac{126}{99} = \frac{42}{33} = \frac{14}{11}$ (b)

3) Let $x = 2.\overline{6}666\dots \rightarrow (1)$

$10x = 26.\overline{6}666\dots \rightarrow (2)$

$(1)-(2), 9x = 24$

$x = \frac{24}{9} = \frac{8}{3}$

Let $y = 0.\overline{9}999\dots$

$10y = 9.\overline{9}999\dots$

$9y = 9$

$y = \frac{9}{9} = 1$

$\therefore 2.\overline{6} - 0.\overline{9} = \frac{8 \times 3}{3 \times 3} - \frac{9}{9} = \frac{24-9}{9} = \frac{15}{9} = \frac{5}{3}$ (c)

4) $\frac{1}{7} = 0.\overline{142857}$

$\therefore m=1, n=7$

$2m+n = 2 \times 1 + 7 = 2+7=9$ (d)

5) $-5+2\sqrt{5}-\sqrt{5} = -5+\sqrt{5}$, sum of a rational and an irrational number. Hence irrational.

6) (i) True, since real numbers are a collection of rational as well as irrational numbers.

(ii) True, the decimal expansion of $\frac{22}{7}$ is non-terminating non-repeating but $\frac{22}{7}$ is a rational number which is in $\frac{p}{q}$ form where p and q are integers and $q \neq 0$.

(iii) False, since product of a rational and an irrational number can be rational also.

eg:- $0 \times \sqrt{5} = 0$, which is a rational number.

7) $0.15 \quad 0.16$

A rational number between 0.15 and 0.16 is 0.155

An irrational number between 0.15 and 0.16 is

$0.155155515555\dots$

$$8) \text{ Let } x = 2.\overline{3333} \dots \rightarrow (1)$$

$$\underline{10x = 23.\overline{3333} \dots} \rightarrow (2)$$

$$9x = 21$$

$$x = \frac{21}{93} = \frac{7}{3}$$

$$\text{Let } y = 4.\overline{151515} \dots$$

$$\underline{100y = 415.\overline{1515} \dots}$$

$$99y = 411$$

$$y = \frac{411}{99} = \frac{137}{33}$$

$$\therefore 2.\overline{3} + 4.\overline{15} = \frac{7 \times 11}{3 \times 11} + \frac{137}{33} = \frac{77 + 137}{33} = \frac{214}{\underline{\underline{33}}}$$