

Test-2

- 1) Which of the following is irrational?
(a) $\sqrt{\frac{4}{9}}$ (b) $\frac{\sqrt{12}}{\sqrt{3}}$ (c) $\sqrt{7}$ (d) $\sqrt{81}$
 - 2) Which of the following is irrational?
(a) 0.14 (b) $0.14\overline{16}$ (c) $0.\overline{1416}$ (d) 0.401400140001...
 - 3) $1.272727\dots$ can be expressed in rational form as
(a) $\frac{14}{99}$ (b) $\frac{14}{11}$ (c) $\frac{11}{14}$ (d) $\frac{99}{14}$
 - 4) If $0.142857142857\dots$ is expressed in the form of $\frac{m}{n}$, then the value of $(2m+n)$ is
(a) 1 (b) 2 (c) 7 (d) 9
 - 5) T or F? Justify your answer
 - (i) π is an irrational number and $\frac{22}{7}$ is a rational number
 - (ii) The product of a rational number and an irrational number is always an irrational number.
 - 6) Between two rational no.s
 - (a) there is no rational number
 - (b) there is exactly one rational number
 - (c) there are infinitely many rational numbers
 - (d) there are only rational numbers and no irrational numbers
 - 7) What kind of decimal expansion each has? Justify
 - (i) $\frac{13}{25}$
 - (ii) $\frac{\sqrt{15}}{\sqrt{3}}$
 - (iii) $\frac{343}{14}$
 - 8) Find a rational number between $0.1212212221\dots$ and $0.12114411441\dots$
 - 9) Express $0.12\overline{3}$ in the form $\frac{p}{q}$; $q \neq 0$
 - 10) Write an irrational number between $\sqrt{2}$ and $\sqrt{3}$.
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IX Test-2 (Answers)

1) (a) $\sqrt{\frac{4}{9}} = \frac{2}{3}$, rational

(b) $\frac{\sqrt{12}}{\sqrt{3}} = \sqrt{\frac{12}{3}} = \sqrt{4} = 2$, rational

(c) $\sqrt{7}$, irrational

(d) $\sqrt{81} = 9$, rational

ans:- $\sqrt{7}$ (c)

2) 0.401400140001... (d)

3) Let $x = 1.\overline{272727} \dots \rightarrow (1)$

$100x = 127.\overline{272727} \dots \rightarrow (2)$

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

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

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

$\therefore m = 1$

$n = 7$

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

5) (i) True, since decimal expansion of π is non-terminating non-recurring and that for $\frac{22}{7}$ is non-terminating recurring.

(ii) False, product of a non-zero rational no. and an irrational no. is always irrational.

eg:- $2 \times \sqrt{5} = 2\sqrt{5}$ is irrational

$0 \times \sqrt{5} = 0$ is rational

6) There are infinitely many rational numbers (c)

7) (i) $\frac{13 \times 4}{25 \times 4} = \frac{52}{100} = 0.52$, terminating decimal expansion

(ii) $\frac{\sqrt{15}}{\sqrt{3}} = \sqrt{\frac{15}{3}} = \sqrt{5}$, irrational number and the decimal expansion is non-terminating non-recurring

(iii) $\frac{313}{12.8} = 24.5$, rational number and the decimal expansion is terminating.

8) 0.13

9) let $x = 0.12333\dots$

$100x = 12.3333\dots \rightarrow (1)$

$1000x = 123.3333\dots \rightarrow (2)$

$(2) - (1), 900x = 111$

$x = \frac{111}{900} = \frac{37}{300}$, which is in the form $\frac{p}{q}$; $q \neq 0$

10) $\sqrt{3} = 1.732$

$\sqrt{2} = 1.414$

An irrational number between them is $1.5151151115\dots$