

IX Homework-2

- 1) Which one of the following is a correct statement?
- (a) decimal expansion of a rational number is terminating
 - (b) decimal expansion of a rational number is non-terminating
 - (c) decimal expansion of an irrational number is terminating
 - (d) decimal expansion of an irrational number is non-terminating non-repeating
- 2) Which one of the following statements is true?
- (a) the sum of two irrational numbers is always an irrational number.
 - (b) the sum of two irrational numbers is always a rational number.
 - (c) the sum of two irrational numbers may be a rational number or an irrational number.
 - (d) the sum of two irrational numbers is always an integer.
- 3) Which of the following is a correct statement?
- (a) Sum of two irrational numbers is always irrational.
 - (b) Sum of a rational and irrational number is always an irrational number.
 - (c) Square of an irrational number is always a rational number.
 - (d) Sum of two rational numbers can never be an integer.
- 4) Which of the following statement is true?
- (a) Product of two irrational numbers is always irrational.
 - (b) Product of a non-zero rational number and an irrational number is always irrational.
 - (c) Sum of two irrational numbers can never be irrational.
 - (d) Sum of an integer and a rational number can never be an integer.
- 5) Which of the following is irrational?
- (a) $\sqrt{\frac{4}{9}}$
 - (b) $\frac{4}{5}$
 - (c) $\sqrt{7}$
 - (d) $\sqrt{81}$
- 6) Which of the following is rational?
- (a) $\sqrt{3}$
 - (b) π
 - (c) $\frac{4}{0}$
 - (d) $\frac{0}{4}$

7) Which of the following is irrational?
(a) 0.14 (b) $0.14\overline{16}$ (c) $0.\overline{1416}$ (d) $0.104001400014\dots$

8) The number $0.318564318564318564\dots$ is
(a) a natural number (b) an integer
(c) a rational number (d) an irrational number

9) If n is a natural number, then \sqrt{n} is
(a) always a natural number
(b) always an irrational number
(c) always an irrational number
(d) sometimes a natural number and sometimes an irrational number.

10) Which of the following numbers can be represented as non-terminating, repeating decimals?

(a) $\frac{39}{24}$ (b) $\frac{3}{16}$ (c) $\frac{3}{11}$ (d) $\frac{137}{25}$

11) Every point on a number line represents
(a) a unique real number (b) a natural number
(c) a rational number (d) an irrational number.

12) An irrational number between 2 and 2.5 is
(a) $\sqrt{11}$ (b) $\sqrt{5}$ (c) $\sqrt{22.5}$ (d) $\sqrt{12.5}$

13) Which of the following is irrational?

(a) 0.15 (b) 0.1516 (c) $0.\overline{1516}$ (d) $0.501500150001\dots$

14) The number $1.\overline{27}$ in the form $\frac{p}{q}$ is

(a) $\frac{14}{9}$ (b) $\frac{14}{11}$ (c) $\frac{14}{13}$ (d) $\frac{14}{15}$

15) The number $0.\overline{3}$ in the form $\frac{p}{q}$ is

(a) $\frac{33}{100}$ (b) $\frac{3}{10}$ (c) $\frac{1}{3}$ (d) $\frac{3}{100}$

16) The smallest rational number by which $\frac{1}{3}$ should

be multiplied so that its decimal expansion terminates after one place of decimal is

(a) $\frac{1}{10}$ (b) $\frac{3}{10}$ (c) 3 (d) 30

17) $0.3\bar{2}$ when expressed in the form $\frac{p}{q}$

- (a) $\frac{8}{25}$ (b) $\frac{29}{90}$ (c) $\frac{32}{99}$ (d) $\frac{32}{199}$

18) $23.\bar{4}3$ when expressed in the form $\frac{p}{q}$ is

- (a) $\frac{2320}{99}$ (b) $\frac{2343}{100}$ (c) $\frac{2343}{999}$ (d) $\frac{2320}{199}$

19) $0.\overline{001}$ when expressed in the form $\frac{p}{q}$ is

- (a) $\frac{1}{1000}$ (b) $\frac{1}{100}$ (c) $\frac{1}{1999}$ (d) $\frac{1}{999}$

20) The value of $0.\bar{2}3 + 0.\bar{2}2$ is

- (a) $0.\bar{4}5$ (b) $0.\bar{4}3$ (c) $0.\bar{4}5$ (d) 0.45

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IX Homework-2 (Answers)

- 1) decimal expansion of an irrational number is non-terminating non-repeating (d) eg:- $1.21211211121111\dots$
- 2) the sum of two irrational numbers may be a rational number or an irrational number (c) eg:- $\sqrt{5} + (2 - \sqrt{5}) = 2$, rational / $\sqrt{5} + \sqrt{5} = 2\sqrt{5}$ irrationals
- 3) Sum of a rational and irrational number is always an irrational number (b) eg:- $2 + \sqrt{5}$ is irrational
- 4) product of a non-zero rational number and an irrational number is always irrational (b)
- 5) $\sqrt{7}$ (c)

$$\sqrt{\frac{4}{9}} = \frac{2}{3}, \text{ rational no.}$$

$\frac{4}{5}$ is a rational no. in $\frac{p}{q}$ form

$$\sqrt{81} = 9, \text{ rational no.}$$

$$6) \frac{0}{4} = 0, \text{ a rational number (d)}$$

$$7) 0.104001400014\dots \text{ (d)}$$

$$8) 0.318564 \text{ is a rational number (c)}$$

$$9) \text{ Sometimes a natural number and sometimes an irrational number (d)}$$

$$\text{eg:- } \sqrt{25} = 5, \text{ a natural number}$$

$$\sqrt{18} = 3\sqrt{2}, \text{ an irrational number}$$

$$10) \frac{39}{24} = \frac{13}{8} = 1.625$$

$$\frac{3}{16} = 0.1875$$

$$\frac{3}{11} = 0.\overline{27} \text{ (c)}$$

$$\frac{137}{25} = 5.48$$

$$11) \text{ a unique real number (a)}$$

$$12) \sqrt{5} \text{ (b)}$$

$$13) 0.501500150001\dots \text{ (d)}$$

$$14) \text{ let } x = 1.\overline{27}2727\dots \rightarrow (1)$$

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

$$99x = 126$$

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

$$15) \quad \text{Let } x = 0.\overline{3333} \dots \rightarrow (1)$$

$$\underline{10x = 3.\overline{3333} \dots \rightarrow (2)}$$

$$(2) - (1), \quad 9x = 3$$

$$x = \frac{3}{9} = \frac{1}{3} \quad (c)$$

$$16) \quad \frac{1}{3} \times \left(\frac{3}{10}\right) = \frac{1}{10} = 0.1 \quad (b)$$

$$17) \quad \text{Let } x = 0.\overline{32222} \dots$$

$$10x = 3.\overline{2222} \dots \rightarrow (1)$$

$$\underline{100x = 32.\overline{2222} \dots \rightarrow (2)}$$

$$(2) - (1), \quad 90x = 29$$

$$x = \frac{29}{90} \quad (b)$$

$$18) \quad \text{Let } x = 23.\overline{434343} \dots \rightarrow (1)$$

$$\underline{100x = 2343.\overline{434343} \dots \rightarrow (2)}$$

$$(2) - (1), \quad 99x = 2320$$

$$x = \frac{2320}{99} \quad (a)$$

$$19) \quad \text{Let } x = 0.\overline{001001001} \dots \rightarrow (1)$$

$$\underline{1000x = 1.\overline{001001001} \dots \rightarrow (2)}$$

$$(2) - (1), \quad 999x = 1$$

$$x = \frac{1}{999} \quad (d)$$

$$20) \quad \begin{array}{r} 0.232323 \dots \\ 0.222222 \dots \\ \hline 0.454545 \dots = 0.\overline{45} \quad (a) \end{array}$$