



NCERT solutions for class 9 Maths Number System Ex-1.2

Q1. State whether the following statements are true or false. Justify your answers.

- (i) Every irrational number is a real number.
- (ii) Every point on the number line is of the form \sqrt{m} , where m is a natural number.
- (iii) Every real number is an irrational number.

Ans: (i) Consider the irrational numbers and the real numbers separately.

We know that irrational numbers are the numbers that cannot be converted in the form

$\frac{p}{q}$, where p and q are integers and $q \neq 0$.

We know that a real number is the collection of rational numbers and irrational numbers.

Therefore, we conclude that, yes every irrational number is a real number.

(ii) Consider a number line. We know that on a number line, we can represent negative as well as positive numbers.

We know that we cannot get a negative number after taking square root of any number.

Therefore, we conclude that not every number point on the number line is of the form \sqrt{m} , where m is a natural number.

(iii) Consider the irrational numbers and the real numbers separately.

We know that irrational numbers are the numbers that cannot be converted in the form

$\frac{p}{q}$, where p and q are integers and $q \neq 0$.

We know that a real number is the collection of rational numbers and irrational numbers.

So, we can conclude that every irrational number is a real number. But every real number is not an irrational number.

Therefore, we conclude that, every real number is not a rational number.

Q2. Are the square roots of all positive integers irrational? If not, give an example of the square root of a number that is a rational number.

Ans: We know that square root of every positive integer will not yield an integer.

We know that $\sqrt{4}$ is 2, which is an integer. But, $\sqrt{7}$ or $\sqrt{10}$ will give an irrational number.

Therefore, we conclude that square root of every positive integer is not an irrational number.

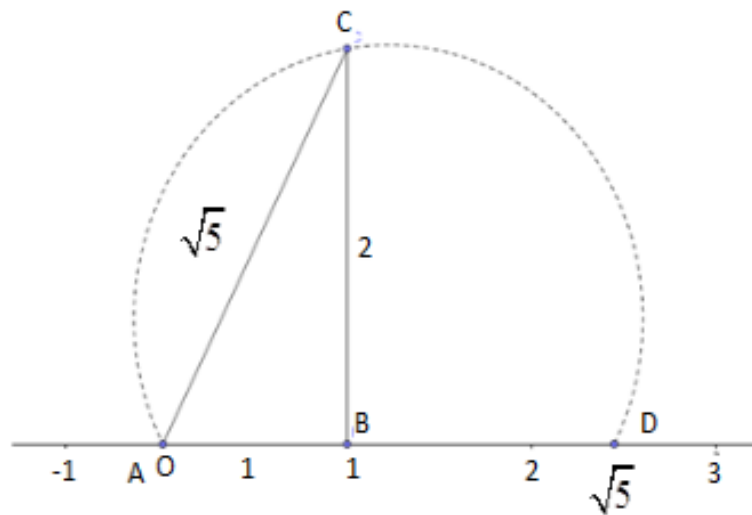
Q3. Show how $\sqrt{5}$ can be represented on the number line.

Ans: According to the Pythagoras theorem, we can conclude that

$$(\sqrt{5})^2 = (2)^2 + (1)^2.$$

We need to draw a line segment AB of 1 unit on the number line. Then draw a straight line segment BC of 2 units. Then join the points C and A , to form a line segment AC .

Then draw the arc ACD , to get the number $\sqrt{5}$ on the number line.



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