

CHAPTER 2

RELATIONS

Example:

For real numbers x and y we write $x R y$ if $x - y + \sqrt{2}$ is an irrational number then the relation R is reflexive.

Sol.

Given that in the set of real numbers R , $x R y$ if $x - y + \sqrt{2}$ is irrational.

Reflexive $x - x + \sqrt{2} = \sqrt{2}$ (irrational) for every real ' x '.

Symmetric relation:

A relation R on a set A is said to be a symmetric relation if $(a, b) \in R \Rightarrow (b, a) \in R$ for all $a, b \in A$.

$a R b \Rightarrow b R a$ for all $a, b \in A$.

If $A = \{2, 4, 6, 8\}$ and $R = \{(2, 4), (4, 2), (4, 6), (6, 4)\}$ then R is symmetric.

Transitive relation:

If A be any set A relation in R on A is said to be transitive relation if $(a, b) \in R$ and $(b, c) \in R \Rightarrow (a, c) \in R$ for all $a, b, c \in A$.

$a R b$ and $b R c$ for all $a, b, c \in A$.

Antisymmetric relation:

Let A be any set A relation R on set A is said to be antisymmetric relation $R \leq N \times N$ is defined by ' x divides y ' is an antisymmetric.

Sol.

$x R y, y R x \Rightarrow x$ divides y, y divides $x \Rightarrow x = y$.