

Answer on Question #44535 - Math - Discrete Mathematics

Any subset of $A \times A$ is called a relation on the set A . A relation R on A is symmetric if $(a, b) \in R \Rightarrow (b, a) \in R \quad \forall a, b \in A$. Give one example each, with justification, of

i) a symmetric relation on ,

ii) a relation that is not symmetric on the set $\{2, 3, 5, 7\}$.

Solution.

i) According to the definition, if R contains an ordered pair (a, b) , it also contains an ordered pair (b, a) .

For example:

$$R = \{(2, 3), (3, 2), (3, 7), (7, 3), (5, 5)\} \quad \text{- all the pairs are symmetric.}$$

ii) Using the definition, we can build a relation that is not symmetric on the given set.

$R = \{(2, 3), (3, 5), (5, 3), (7, 7)\}$ - relation contains the pair $(2, 3)$, but it doesn't contain symmetric pair $(3, 2)$.