

the cartesian product of sets A and B and is denoted by $A \times B$.

Thus, $A \times B = \{(a, b): a \in A \text{ and } b \in B\}$

If $A = \Phi$ or $B = \Phi$, then we define $A \times B = \Phi$

Note:

1. $A \times B \neq B \times A$

2. If $n(A) = m$ and $n(B) = n$, then $n(A \times B) = mn$ and $n(B \times A) = mn$

3. If atleast one of A and B is infinite, then $(A \times B)$ is infinite and $(B \times A)$ is infinite.

Relations

A relation R from a non-empty set A to a non-empty set B is a subset of the cartesian product set $A \times B$. The subset is derived by describing a relationship between the first