

Countable sets

(1)

Remarks:-

1. A Function $f: A \rightarrow B$ is said to be one-to-one (1-1) if $\forall a, b \in A$ then $f(a) = f(b)$ iff $a = b$.
2. A Function $f: A \rightarrow B$ is said to be onto if $f(A) = B$.
3. if f is 1-1 and onto then f is 1-1 correspondence. and written $A \sim B$.
4. $\mathbb{J} = \{1, 2, \dots\}$
 $\mathbb{J}_n = \{1, 2, 3, \dots, n\}$

Definition:-

A set X is said to be finite if its empty or equivalent the set \mathbb{J}_n for some positive integer.

A set which is not finite is called infinite.

Example:- Let $A = \{14, 12, 30, 15\}$, $\mathbb{J} = \{1, 2, 3, 4\}$

s.t $f(12) = 2$, $f(30) = 1$, $f(14) = 4$, $f(15) = 3$

$\therefore f$ is 1-1 and onto (1-1 correspondence).

we get $A \sim \mathbb{J}_4$

$\therefore A$ is finite.