

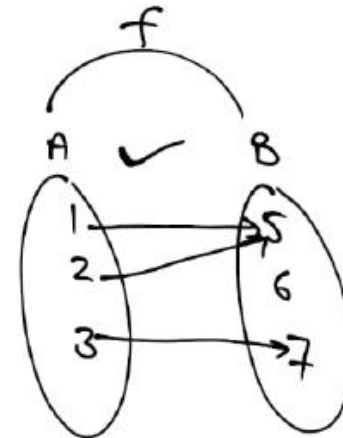
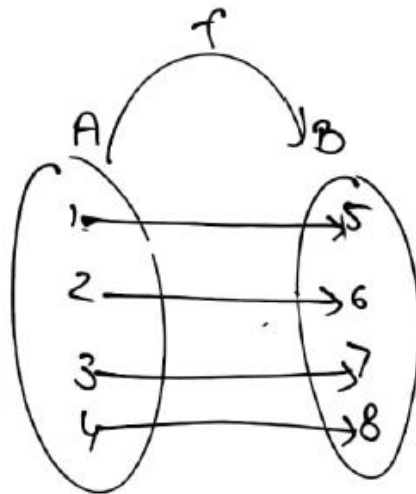
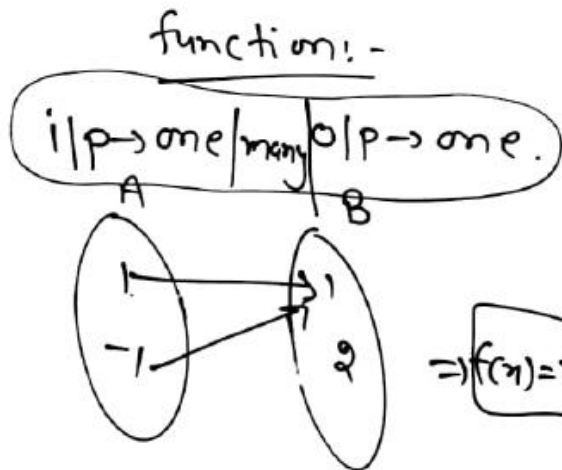
Relation & function

function :- Let A & $B \rightarrow$ 2 non-empty set:-

then a function from A to B is define:-

$\Rightarrow f: A \rightarrow B$ such that:-

- i) all element of set A relate with the elements of set B .
- ii) no. element of set A relate with more than one element of set B .



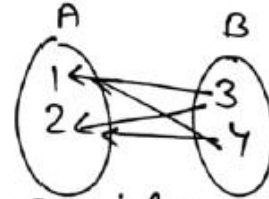
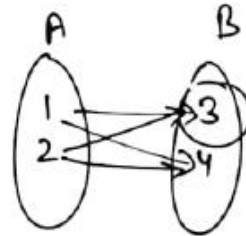
Relation & function

function:-

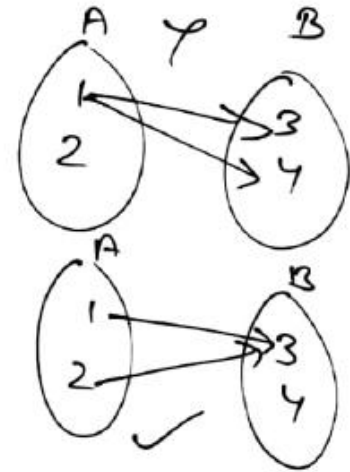
$A = \{1, 2\}$, $B = \{3, 4\}$

$\Rightarrow R = \{(1, 3) (1, 4) (2, 3) (2, 4)\}$

$\Rightarrow R = \{(3, 1) (3, 2) (4, 1) (4, 2)\}$

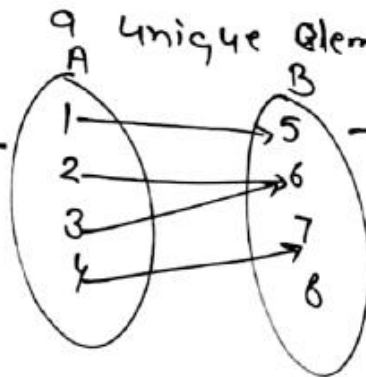


function



\Rightarrow function:- a function is a rule in which each element in A is associated with a unique element in B:-

Domain
 $\{1, 2, 3, 4\}$

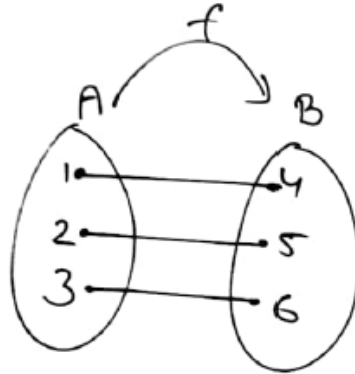


Co-Domain = $\{5, 6, 7, 8\}$
Range = $\{5, 6, 7\}$

Relation & function

Types of Function:-

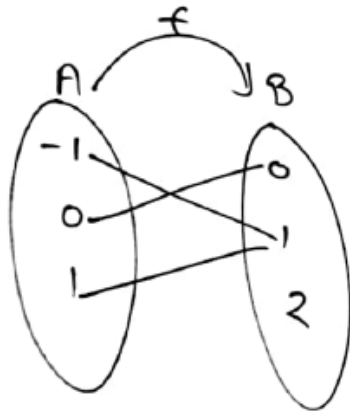
i) one-one :-
 ↓
(injective)



if the image of ^{unique} distinct element of A, in B is also distinct then it is one-one otherwise.

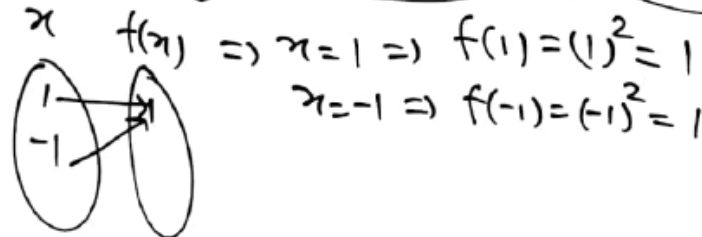
iii) many-one:-

if more than one element of set A has a unique image in set B. then it is called many-one.



Ex:- $f(x) = x$, $x \in \mathbb{R}$
 given fun. \rightarrow one-one / many-one

Ex: $f(x) = x^2$, $x \in \mathbb{R}$



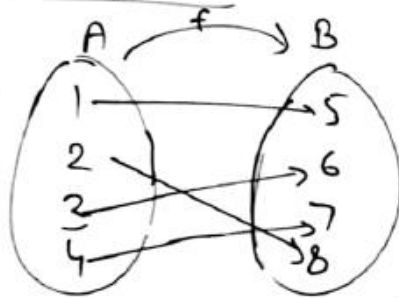
Relation & function

Types of function:-

iii) onto (Surjective):-

$f: A \rightarrow B$ is onto:- if every element of B is an image of elements in set A.

one-one

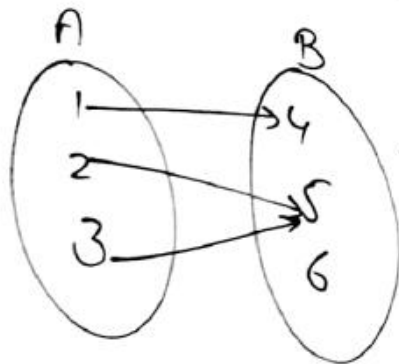


→ Codomain:- $\{5, 6, 7, 8\}$
 Range:- $\{5, 6, 7, 8\}$

↳ Codomain = Range

iv) # into →

many-one



→ into function → if any element in B is not a image of elements of A then it is into.

Codomain \neq Range