

(Course
13+14)

Chapter no 2:-
Functions

Definition:-

Functions is a rule that assigns a unique value to every element of domain.

Examples:-

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

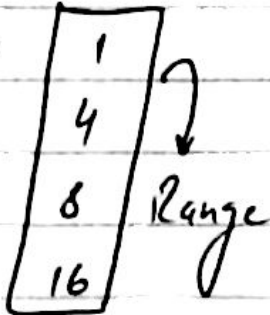
$f(x) = x^2$

$f(1) = 1$

$f(2) = 4$

$f(3) = 9$

$f(4) = 16$



ii) $f(x) = \pm \sqrt{x}$

$f(0) = \pm \sqrt{0} = 0$

$f(1) = \pm \sqrt{1} = \pm 1$

Not a function

iii) $f(x) = x^2$ from \mathbb{N} to \mathbb{N}

(Domain)

(Range)

2

$f(2)$

1

1

2

4

Function

3

9

4

16

⋮

⋮

iv) $f(x) = \frac{1}{x^2-4}$ from \mathbb{Z} to \mathbb{Z}

\mathbb{Z} to \mathbb{Z}

2

$f(x)$

⋮

⋮

-3

45

-2

∞

-1

Not a function

0

1

2

3

⋮

Types of Functions

- i) Subjective (Onto function)
- ii) Objective (One to One function)

i) Subjective (Onto function):
Range will be noted in Set and should be equal to Domain.

ii) Objective (1-1):
Two of values should not have same value.

Examples:-

i) $f(1) = 1$, $f(-1) = 1$
Since two different values of domain has same ans so f is not 1-1 function.

ii) $f(x) = x + 3$ from \mathbb{Z} to \mathbb{Z}

x	$f(x)$	$f(x)$ is function because no two different values of Domain has same value so $f(x)$ is (1-1) function.
\vdots	\vdots	
-3	0	
-2	1	
-1	2	
0	3	
1	4	
2	5	
3	6	
\vdots	\vdots	