CS & IT ENGINEERING

DISCRETE MATHS
SET THEORY

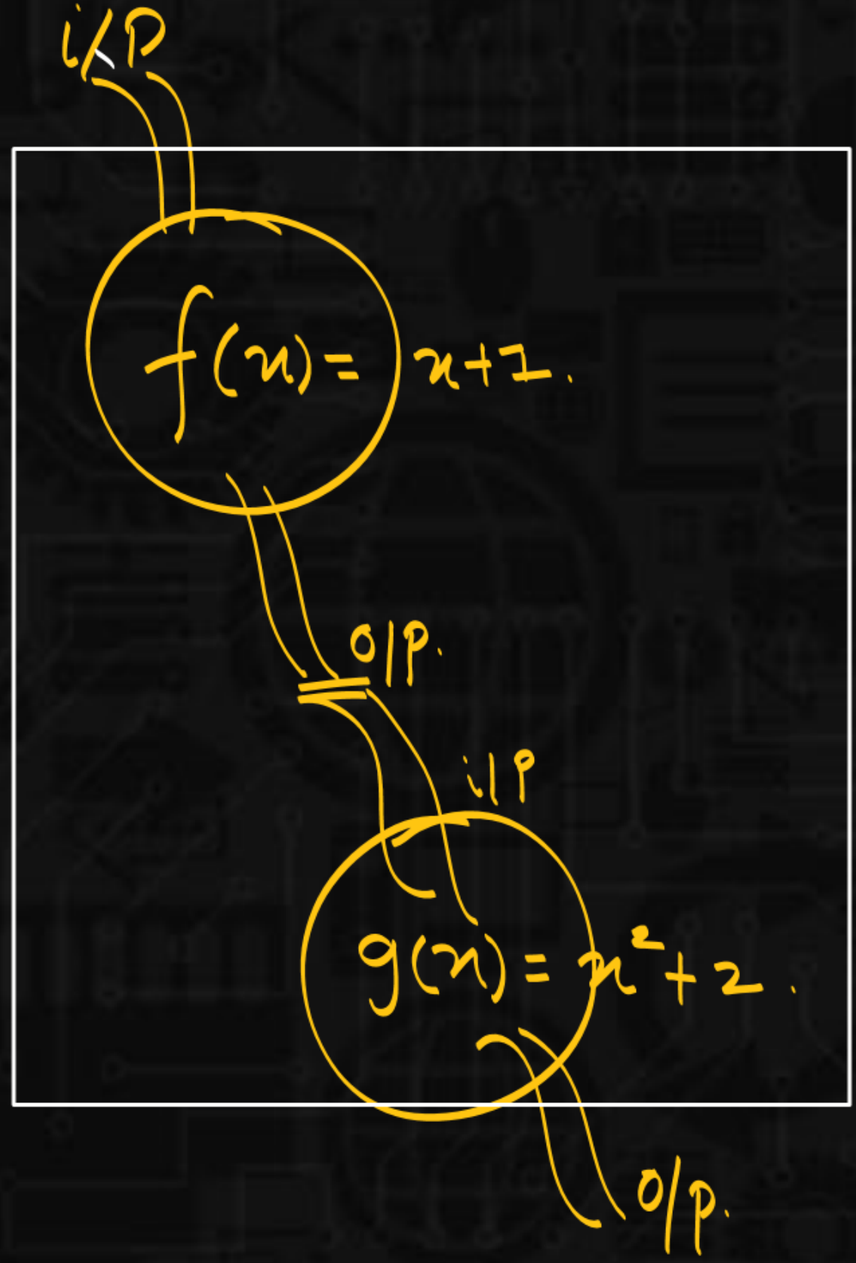
Lecture No. 5

By- SATISH YADAV SIR

- 01 onto Functions
- 02 1:1 correspondance Functions
- 03 Number of Functions
- 04 Types of Functions
- 05 Various Examples in Functions

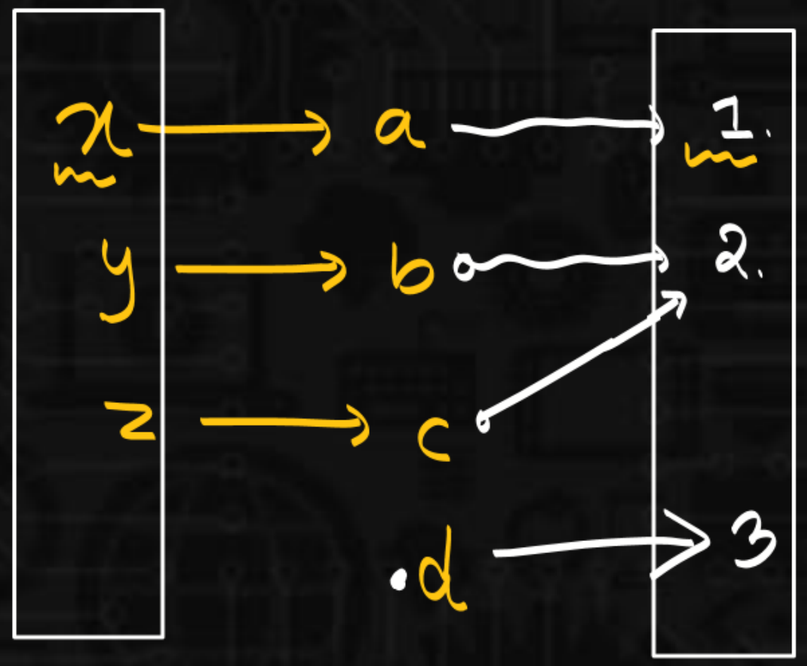
Functions

Composition of functions:



Functions

$f : A \to B$ $\quad$ $g : B \to C$.



$f : A \to B$ $\begin{cases} f(x) = a \\ f(y) = b \end{cases}$ $\quad f(z) = c$.

$g : B \to C$ $\begin{cases} g(a) = 1 \\ g(c) = 2 \end{cases}$ $\quad g(b) = 2$ $\quad g(d) = 3$.

$g(a) = 1$ $\quad g(b) = 2$

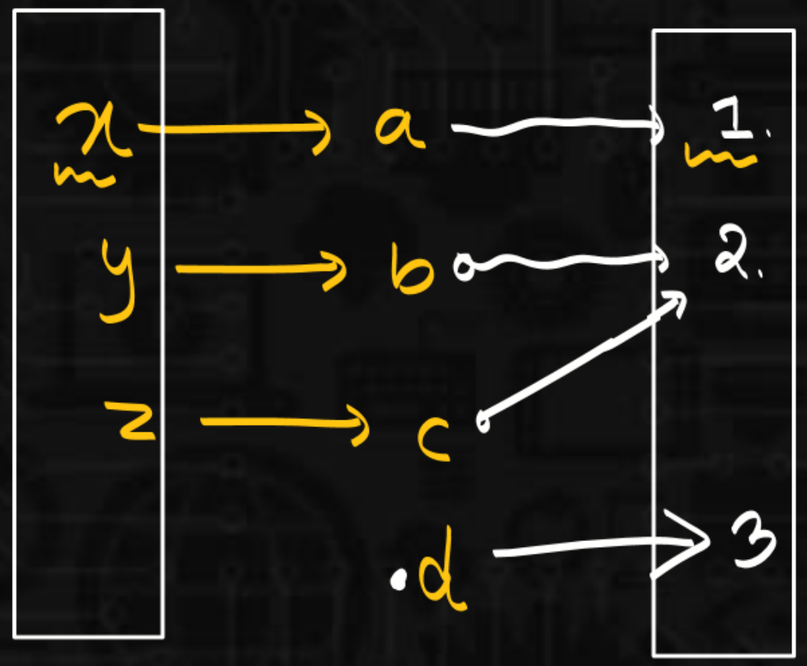
$g(f(x)) = 1$ $\quad g(f(y)) = 2$.

$g(c) = 2$.

$g(f(z)) = 2$.

Functions

$f: A \to B$ $\quad$ $g: B \to C$.



$g(f(x)) = 1$.

$g(f(c)) = 1$.

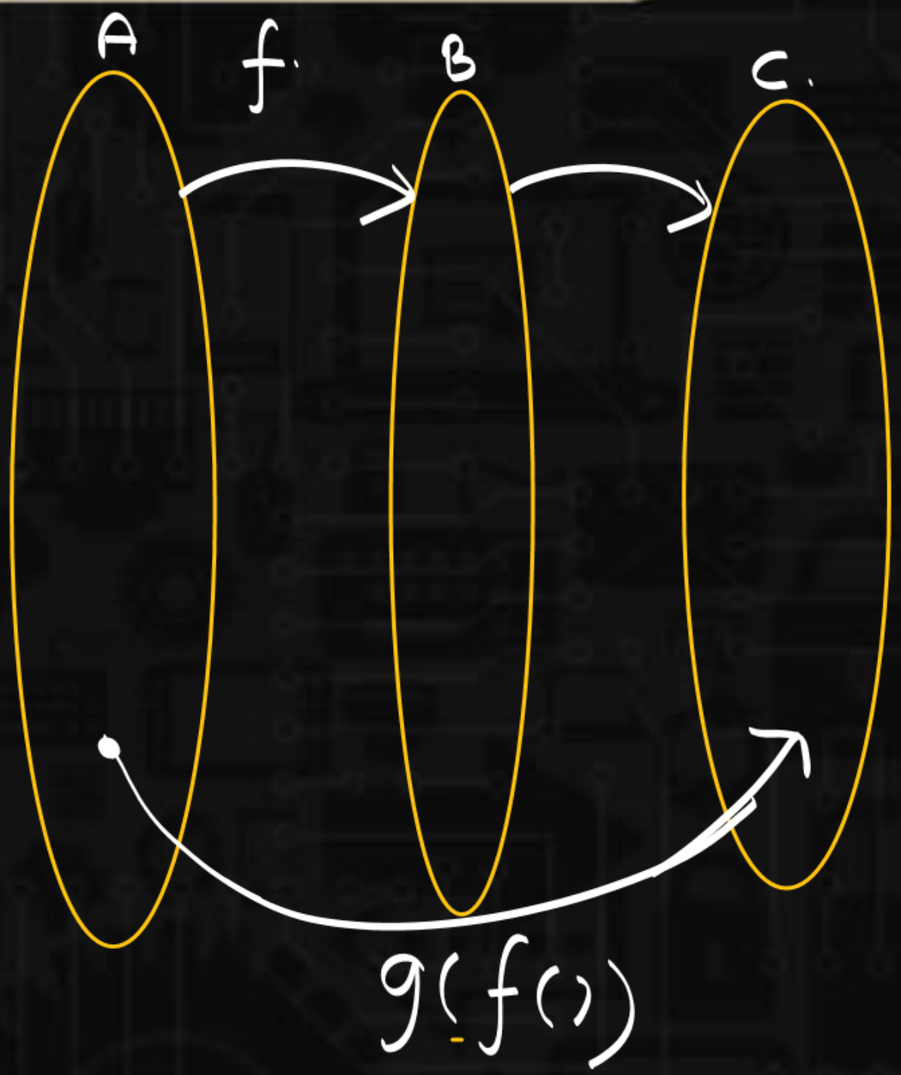
gof

$g(f(x_1)) = 1$

$g(c) = 2$.

$g(f(2)) = 2$

Functions



$f: A \to B \quad g: B \to C$

$g \circ f: A \to C$

Functions

$f: Z \to Z$ $\quad g: Z \to Z$.

$f(x) = 2x+1$ $\quad g(x) = 2x+5$

$$gof = g(f(x))$$

$$= g(2x+1)$$

$$= 2(2x+1)+5$$

$$= 4x+2+5$$

$$= 4x+7$$

$$fog = f(g(x))$$

$$= f(2x+5)$$

$$= 2(2x+5)+1$$

$$= 4x+10+1$$

$$= 4x+11$$

$gof \neq fog$

Functions

$f: A \to B \quad g: B \to C$.

→ if f & g are 1:1 Function, then gof is 1:1.

→ if f & g are onto then gof is onto.

Functions

$f: A \to B \quad g: B \to C$.

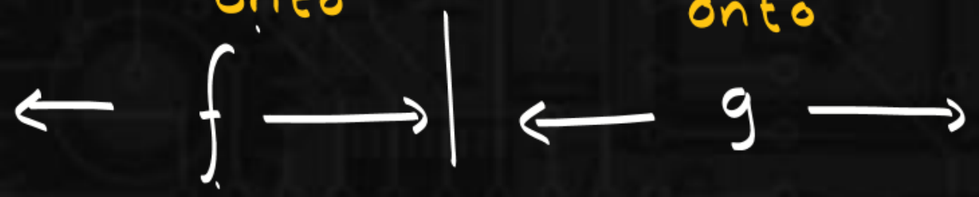
→ if f & g are 1:1 Function, then gof is 1:1 (True)

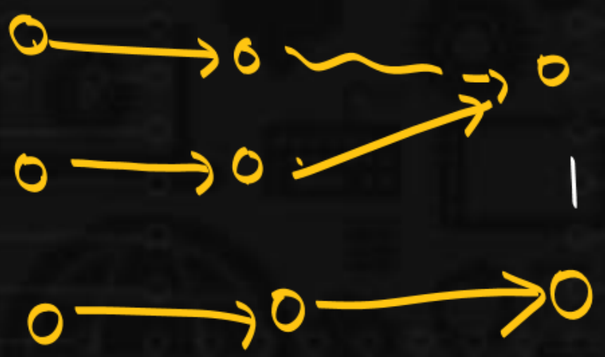
not allowed.

Functions

if f & g are onto then gof is onto. (True)

onto onto





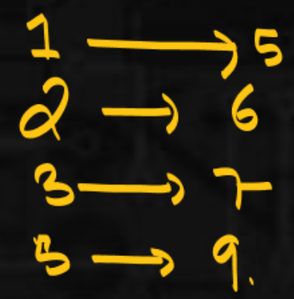
Functions

$f(x) = x+1 \qquad g(x) = x+3$

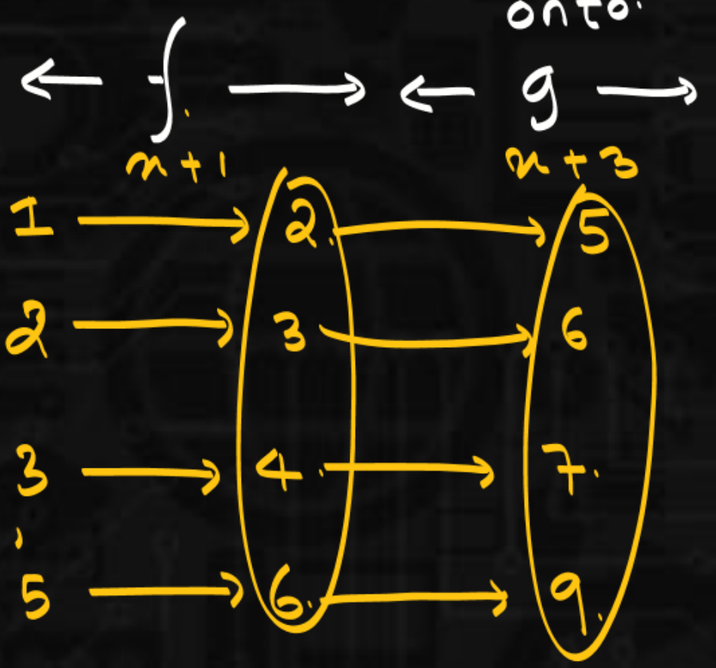
$gof = g(f(x)) = g(x+1)$

$= (x+1)+3$

$= x+4$



onto $gof: x+4$




THANK YOU GW
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