



CLASS- XII(NON-MED)

ASSIGNMENT-2(MATHS)

CH-1(RELATIONS AND FUNCTIONS)

❖ LET'S REVISE:

- **Ex- 1.1 – Types of Relation:(1 mark)**
 - a) Reflexive- A relation is called reflexive if $a \in A$ then $(a,a) \in R$.
 - b) Symmetric - A relation is called symmetric if $(a, b) \in R$ then $(b, a) \in R$, where $a, b \in A$.
 - c) Transitive - A relation is called transitive if $(a, b) \in R$ and $(b,c) \in R$ then $(a,c) \in R$, where $a, b, c \in A$.

Equivalence Relation – Reflexive, Symmetric and Transitive.
- **Ex- 1.2 – Types of Function: (4 marks)**
 - a) F is One-One(or Injective) – If $F(x) = F(y)$ then $x = y$, where $x \in X, y \in Y$.
 - b) F is Onto(or Surjective) – If for each $y \in Y$, there exists $x \in X$ such that $F(x)=y$
- **Ex- 1.3 – Composition of Functions and Invertible Function :**
 - a) Composite function: (1 mark)

Let $f: R \rightarrow R, g: R \rightarrow R$ be two functions, then
 $f \circ g(x) = f(g(x))$ and $g \circ f(x) = g(f(x))$
 - b) Invertible Function : (4 marks)
 - i) If function f is linear :
 - Inverse of a function exists only if function is one-one and onto.
 - Step -1: Show f is one-one and onto.
 - Step -2: Find g such that $g = f^{-1}(x)$
 - ii) If function f is quadratic :

Let $f: R \rightarrow R, g: R \rightarrow R$ be two functions, then g is called Inverse of f if
 $f \circ g(x) = f(g(x))$ and $g \circ f(x) = g(f(x))$.

❖ Important questions:

1. A Relation $R:A \rightarrow A$ is said to be Reflexive if ----- for every $a \in A$ where A is non empty set.
2. Prove that the function $f: R \rightarrow R$, given by $f(x) = 2x$, is one – one.
3. State whether the function is one – one, onto or bijective $f: R \rightarrow R$ defined by $f(x) = 1 + x^2$.
4. Let $S = \{1, 2, 3\}$. Determine whether the function $f: S \rightarrow S$ defined as below have inverse, $f = \{(1, 2), (2, 1), (3, 1)\}$.

5. Find gof if $f(x) = |x|$, $g(x) = |5x + 1|$.
6. Show that function $f: \mathbb{N} \rightarrow \mathbb{N}$, given by $f(x) = 2x$, is one – one.
7. State whether the function is one – one, onto or bijective $f: \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(x) = 3 - 4x$.
8. Show that the relation R in the set \mathbb{Z} of integers given by $R = \{(a, b) : 2 \text{ divides } a-b\}$, is an equivalence relation.
9. Check whether the relation R defined in the set $\{1, 2, 3, 4, 5, 6\}$ as $R = \{(a, b) : b = a+1\}$ is reflexive, symmetric or transitive.
10. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be $f(x) = 2x + 1$ and $g: \mathbb{R} \rightarrow \mathbb{R}$ be $g(x) = x^2 - 2$, find
(i) gof (ii) fog

- ❖ **SOURCES** – Please refer iDream learning mobile app and Diksha mobile app (or www.diksha.gov.in)
- ❖ **e-books** – NCERT e-books are available on diksha app.



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