National Institute of Open Schooling
Senior Secondary Course : Mathematics
Lesson 23 : Relations and Functions -II
Worksheet – 23

1. Identify any one equivalence relation on the set A of all real numbers (R) and justify the equivalence relation.

2. Show that the relation of R on the set S of all real numbers, is defined as $R = \{(a, b) : a \leq b^2\}$ which is neither reflexive nor symmetric nor transitive.

3. Let F be the function from set A to B. Through the mapping of different elements from set A to B, show that the function F is One-to-One and Many-to-One function.

4. Let R be a relation on the set S of all real numbers, defined by $R = \{(a, b) : a \leq b\}$ Show that R is reflexive and transitive but not symmetric.

5. Prove that F: R$\longrightarrow$R defined by $F(x) = 2x^2 + 3$ is a objective function.

6. Let F : R®R defined by f(x) = 5x+6 for all xÎR. show that f is invertible and find f^{-1}.

7. For the binary operation * defined by $a*b = \frac{a+b}{2}$ for all a,bÎR, determine whether * is (i) commutative (ii) associative.

8. If $f(x) = x^2+3$ for all xÎR, and g(x) = 2x+7 for all xÎR, then find fog and gof . Also check equality of fog and gof.

9. Take any three functions such as f(x), g(x) and h(x). Find out fog, gof and hof and check equality of functions.

10. Prove that the function f: R$\rightarrow$R defined by $f(x) = x^3$ is one-one and onto. Show the function through graphs.