**HOLIDAY HOMEWORK**

**CLASS XII**

***CHAPTER 1***

**1.Let and , then find**

**2. If then find**

**i) ii) iii) iv)**

**3. Let be defined by . Show that f is invertible. Find**

**4. Show that the relation** R **in the set R of real numbers, defined as R= , is neither reflexive nor symmetric nor transitive.**

**5. Show that the relation** R **in R is defined as** R**=, is reflexive and transitive but not symmetric.**

**6. Show that the relation R in the set A of all the books in a library of a college, given by R={(x, y) : x and y have same number of pages}, is an equivalence relation.**

**7. Show that the relation R in the set A={1, 2, 3, 4, 5}, given by R={ : is even}, is an equivalence relation**

**8. Let L, be the set of all lines in XY-plane and R be the relation in L defined as**

**R=. Show that R is an equivalence relation.**

**9. Check the injectivity and surjectivity of the following functions :**

**i) ii)**

**iii)**

**10. In each of the following cases, state whether the function is one-one, onto or bijective. Justify your answer.**

**i) ii)**

**11. If show that , for all**

**12. Consider given by . Show that is invertible. Find the inverse of**

**13. A relation defined on the set N of all natural numbers. Show that is reflexive but not symmetric.**

**14. Show that the relation : R={(1, 1), (2, 2), (3, 3), (1, 2), (2, 3), (1, 3), (3, 2)} is a reflexive and transitive but not symmetric.**

**15. Show that the relation R={(1, 1), (1, 2), (2, 2), (3, 3), (3, 2), (2, 3), (2, 1)} is reflexive and symmetric but not transitive.**

**16. Show that the relation R={(1, 2), (2, 3), (3, 2), (1, 3), (2, 1), (2, 2), (3, 3), (3, 1), (1, 1)} is reflexive, symmetric and transitive.**

**17. Show that the relation R={(1, 1), (1, 2), (2, 1), (2, 2)} is reflexive, symmetric and transitive.**

**18. Show that the relation R={(1, 1), (3, 3), (5, 5), (1, 3), (3, 1), (3, 5)} is reflexive and is neither symmetric nor transitive.**

**19. Show that the relation R defined in the set A of all triangles as :**

**is an equivalence relation.**

**20. Show that the relation R defined in the set A of all polygons as is an equivalence relation.**