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**Class: XII Mathematics- Relations**

1. **Show that** the relation R defined on the set A of all triangles in a plane as is an equivalence relation.

2. Show that the relation R on the set A={1,2,3} given by

R = {(1,1), (2,2),(3,3),(1,2)(2,3)} is reflexive but neither reflexive but neither symmetric nor transitive.

3. Show that the relation R on the set A={1,2,3} given by R={(1,2), (2,1)} is symmetric but neither reflexive nor transitive.

4. Check the following relations R and S for reflexivity, symmetry and transitivity. (i) a R b iff b is divisible by a, 

(ii) , where are straight lines in a plane.

5. Prove that the relation R on the set Z of all integers numbers defined by  is divisible by 2, is an equivalence relation.

6. Show that the relation R on the set A = {1, 2,3, 4,5} given by , is an equivalence relation.

7. Show that the relation R on the set , given by  is an equivalence relation. Find the set of all elements related to 1i.e.equivalence class[1].

8. Prove that the relation R on the set N x N defined by  is an equivalence relation.

9. Let A = {1,2,3,...9} and R be the relation on AxA defined by (a,b) R (c,d) if a+d = b+c for all (a,b), (c,d) AxA. Prove that R is an equivalence relation and also obtain the equivalence class [(2,5)].

10. Let N denote the set of all natural numbers and R be the relation on NxN defined by  . check whether R is an equivalence relation on NxN.