Example 5: Consider the relation of C of set inclusion on any collection of sets:

1) $A \subset A$ for any set, so $\subset$ is reflexive
2) $A \subset B$ dose not imply $B \subset A$, so $\subset$ is not symmetric
3) If $A \subset B$ and $B \subset C$ then $A \subset C$, so $\subset$ is transitive
4) $\subset$ is reflexive, not symmetric & transitive, so $\subset$ is not equivalence relations
5) $A \subset A$, so $\subset$ is not Irreflexive
6) If $A \subset B$ and $B \subset A$ then $A = B$, so $\subset$ is anti-symmetric

Example 6: If $A = \{1,2,3\}$ and $R=\{(1,1),(1,2),(2,1),(2,3)\}$

Is R equivalence relation ?

1) 2 is in A but $(2,2) \notin R$, so R is not reflexive
2) $(2,3) \in R$ but $(3,2) \notin R$, so R is not symmetric
3) $(1,2) \in R$ and $(2,3) \in R$ but $(1,3) \notin R$, so R is not transitive

So R is not Equivalence relation