Assignment 10

Due: Friday December 10, 9:30 am

Note: No late assignment will be accepted after 2pm on December 13.

1. (5 points) Let R be the relation on the set {a,b,c,d} containing the ordered pairs (a,c), (b,d),(c,a), and (b,a). Find R^2, R^3, the reflexive closure, symmetric closure and transitive closure of R.

2. (2 points) Find the smallest relation containing {(1,2),(2,1),(1,4),(3,3)} that is

   a. reflexive and transitive

   b. symmetric and transitive

3. (3 points) Let R be the relation on the set of ordered pairs of positive integers such that $((a,b),(c,d)) \in R$ if and only if ad=bc. Show that R is an equivalence relation.

4. (2 points) Determine if the following collections of subsets are partitions of {a,b,c,d,e,f,g}. If it is a partition then list the ordered pairs in the equivalence relations produced by the partition.

   a. {a,b,c},{e,f,g}

   b. {a,b},{c,d},{e,f,g}.