HOMEWORK 3, DUE THURSDAY OCTOBER 19TH

1. "The union of two subgroups of a group G is a subgroup of G".
True or False? If true then give a proof and if false then give a counterexample.

2. For Chapter 2, Section 4: 1 (b) and (c), describe the equivalence classes.

3. For each subgroup of D_4, list all the left and right cosets. (Since D_4 has many subgroups, it is only necessary to do this up to the obvious symmetries).

4. Chapter 2, Section 4: 9, 10, 12, 16, 17, 26, 27, 29, 30.

Challenge Problems: (Just for fun)

5. Chapter 2, Section 4: 43.

6. "Every countable group is finitely generated". True or False? If true then give a proof and if false then give a counterexample. (Finitely generated means that the group is generated by a finite subset).