General Mathematics and ACM II

Exercise 8

March 2, 2011

1. (Ivanov, p. 39.) Prove that the symmetry group of an equilateral triangle is isomorphic to the abstract group with two generators a and b of order 2 satisfying the additional relation $aba = bab$.

   Recall: A group element g is of order n if n is the smallest natural number such that $g^n = e$.

   Hint: Count the number of elements of this group.

2. Let G be a group, and let H and K be subgroups of G. Show that $H \cap K$ is also a subgroup of G.