General Mathematics and CPS II

Exercise 8

February 29, 2012

1. Let G be a finite group (i.e., a group with a finite number of elements), and let $a \in G$. Show that there exists some $n \in \mathbb{N}$ such that $a^n = e$.

   Recall: a^n is understood as letting the group operation act between n copies of a.

2. (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 $g^n = e$.