

# Writing Assignment 2

**Due: May 16, 2005**

**Recommended length: 1-2 pages.**

**Recommended format: typed.**

A group  $G$  is called *metabelian* if there exists a normal subgroup  $A \triangleleft G$  such that both  $A$  and  $G/A$  are abelian.

The goal of this assignment is to explore some of the properties of metabelian groups. In particular, you should show

1.  $G$  is metabelian if and only if  $G''' = 1$  ( $G''$  is the commutator of the commutator).
2. If  $H$  is a subgroup of a metabelian group  $G$ , then  $H$  is metabelian.
3. If  $G$  is metabelian and  $\varphi : G \rightarrow K$  is a group homomorphism, then  $\varphi(G)$  is metabelian.

Again, in doing so, you should

- (a) Briefly introduce the topic.
- (b) Give the necessary definitions and results you will need for your proofs. You do not need to prove the results that are in the book, but both the results and the definitions should be stated in your own words in a way that focuses them on the this paper.

You may assume that the reader has read up through Chapter 2.1 of the textbook and has read your paper on commutator subgroups.

- (c) State and prove your results.

Turn in both this paper and your draft of the previous paper (which does not have to be rewritten, yet).