MAT 149A University of California Winter 2003

Homework 4

due Wednesday February 5 in class

1. Biggs 13.2 # 2 page 275

2. Biggs 13.3 # 3 page 278

3. Biggs 13.3 # 5 page 278

4. Biggs 13.5 # 2 page 282

5. Let a and b be elements of a group G. Show that a and bab^{-1} have the same order. Give an example when a and bab have different orders.

6. Let $SL(2)$ be the group of 2×2 matrices with determinant 1.

(1) Show that $SL(2)$ is an infinite group (hint: produce infinitely many 2×2 matrices with determinant one).
(2) Find two matrices in $SL(2)$ that do not commute.