

## MATH 101A: HOMEWORK

### 1. HOMEWORK 1

There will be weekly assignments of which this is the first. There are no final exams or any other work to be done for this course! Students are encouraged to discuss the problems in groups. However, each student should write his own answers using his own words.

The following two problems are due Thursday (9/6/7). The answers will be posted on Friday evening.

1.1. Prove that a finite monoid with the left cancellation property is a group. (A monoid  $M$  has the *left cancellation property* if for all  $x, y, z \in M$ ,  $xy = xz$  implies  $y = z$ . Right cancellation is analogous.)

1.2. Find an example of a solvable group which is not metabelian. (A group  $G$  is *metabelian* if it has an abelian normal subgroup  $A$  so that  $G/A$  is also abelian.)