# Homework No.2 for Math 3121

Due Date: Oct. 11 (Wednesday).

**Problem 1**. Compute the order of elements (just give the answers, no details needed):

(1). $-1, -i, \frac{1}{2} + \frac{\sqrt{3}}{2}i, 3$ in $G = \mathbb{C}^*$,

(2). $5, 6, 8$ in $\mathbb{Z}_{12}$.

(3). $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}, \begin{pmatrix} 1 & -1 \\ 1 & 0 \end{pmatrix}$ in $GL(2, \mathbb{R})$.

**Problem 2**. Let $G$ be a group, suppose that $a^2 = e$ for all $a \in G$, prove that $G$ is an abelian group.

**Problem 3**. Page 55, problems 8, 9, 10, 11, 12, 13