PREP 11

Due: 11/09/2016

Reading. (BB) Read Section 3.2 in the textbook. Focus on Corollary 3.2.3 and use it to prove (1) and (2) below. Pay attention to cyclic groups, cyclic subgroups, the examples on pg. 108. Make sure you understand Lagrange's Theorem (3.2.10).

Exercises.

(1) For $i \in \mathbb{C}$ ($i^2 = -1$), the set $\{1, i, -1, -i\}$ is a subgroup of $\mathbb{C}^\times$ (the group of invertible elements of $\mathbb{C}$ with operation of multiplication).
(2) The set of upper triangular $n \times n$ matrices with non-zero diagonal entries is a subgroup of $GL_n(\mathbb{C})$.
(3) The multiplicative group $(\mathbb{Z}_9)^\times$ is cyclic, but $(\mathbb{Z}_{12})^\times$ is not cyclic.