**Name:** _____

Read Section 3.3. This reading introduces the definition of a subgroup, provides several examples as well as a "non-example," and gives criteria for determining whether a subset of a group is a subgroup.

**Reading Questions**

1. Make sure you know the definitions of subgroup, trivial subgroup, and proper subgroup.

2. Reread Example 3.25. Verify directly that $\{\pm 1, \pm i\}$ is a subgroup of $\mathbb{C}^*$. (To verify "directly" means to use the definition of a subgroup, rather than invoking a proposition like Proposition 3.30 or 3.31.)

3. Reread Examples 3.26 and 3.27. Explain in your own words why $SL_2(\mathbb{R})$ is a subgroup of $GL_2(\mathbb{R})$, but $GL_2(\mathbb{R})$ is not a subgroup of $\mathbb{M}_2(\mathbb{R})$.

4. Reread Example 3.24. Use Proposition 3.31 to give a shorter proof that $\mathbb{Q}^*$ is a subgroup of $\mathbb{R}^*$ under multiplication.

5. What struck you in this reading? What is still unclear? What remaining questions do you have?