**Homework 2**
Due in class Thursday, 1/23

These exercises should be viewed as a suggested minimum. Some subset of these exercises will be graded and you are encouraged to try all of the exercises in the indicated book sections.

**Exercises from text**:
Section 3: 2, 4, 6, 8, 18
Section 4: 4, 8, 9, 31, 34

**Additional Exercise(s)**:

1. Let $G$ be a group and $a \in G$. Prove that $(a')' = a$.
2. Let $\langle S, * \rangle$ be a binary algebraic structure and define $\mathrm{Aut}(S)$ to be the set of isomorphisms from $S$ to $S$. That is,
$$\mathrm{Aut}(S) = \{f : S \to S \mid f \text{ is an isomorphism}\}.$$
Prove that $\langle \mathrm{Aut}(S), \circ \rangle$ is a group, where $\circ$ is the usual function composition. You do not need to prove that $\circ$ is associative (this is well-known) and you may use results proved in class, so long as you cite them.

**Hint(s)**:
Section 4, # 9: $\mathbb{R}^* = \mathbb{R} \setminus \{0\}$