**Homework 5, due on Friday, May 5.**

**Reading:** Read §§5.1-5.4.

**Practice Problems**

**§5.1, pp. 225-226:** 5,7cdjk. Do more of 7 and other starred problems if you feel unsure of the definitions in §5.1.

**§5.2, pp. 240-241:** 7,15ab.

**Hand-In Problems**

**§3.5, p. 155:** 16.

**§4.1, p. 182:** 11, 14 - give two proofs for 14, one that uses induction and one that does not. *Hints: For either proof, it may be helpful to write the three consecutive integers as* $n-1$, $n$, *and* $n+1$. *For the inductive proof, you may instead use the book's hint in the appendix.*

**§5.1, p. 227:** 13a

**§5.2, p. 239:** 2(b)

**Problem A4.** Prove that an integer is divisible by 9 if and only if the sum of its digits is divisible by 9.

**Problem A5.** Give an example of a set $S$ that contains an element $x$ such that $x \in S$ and $x \subseteq S$.

**Problem A6.** (a) Let $B$ be a subset of some universal set $U$. Prove that $(B^c)^c = B$. (You can prove this directly by an "element chase." Or it may be deduced as a corollary of a proposition in the book.)

(b) Do **§5.2, p. 240:** 8.

**Problem A7.** Let $A$ and $B$ be subsets of some universal set $U$. Prove each of the following.

(a) $A - (A \cap B) = A - B$.

(b) The set $A \cup B$ is the disjoint union of the three sets $A - B$, $A \cap B$, and $B - A$.