Assigned reading: Chapters 1 and 2 of Gallian.

Recommended practice questions: Chapter 2 of Gallian, exercises
1, 2, 3, 4, 5, 6, 13, 14, 17, 23, 25, 26

Assigned questions to hand in:

(1) (Gallian Chapter 2 # 2bc) Which of the following binary operations are associative? (Justify your answers.)
   (b) division of nonzero rationals
   (c) function compositions of polynomials with real coefficients

(2) (Gallian Chapter 2 # 3bc) Which of the following binary operations are commutative? (Justify your answers.)
   (b) division of nonzero rationals
   (c) function compositions of polynomials with real coefficients

(3) (Gallian Chapter 2 # 4bc) Which of the following sets are closed under the given operation? (Justify your answers.)
   (b) \{0, 4, 8, 12\} addition mod 15
   (c) \{1, 4, 7, 13\} multiplication mod 15

(4) (Gallian Chapter 2 # 9) Show that \{1, 2, 3\} under multiplication modulo 4 is not a group but that \{1, 2, 3, 4\} under multiplication modulo 5 is a group.

(5) (Gallian Chapter 2 # 10) Show that group $GL(2, \mathbb{R})$ of Example 9 is non-Abelian by exhibiting a pair of matrices $A$ and $B$ in $GL(2, \mathbb{R})$ such that $AB \neq BA$.

(6) (Gallian Chapter 2 # 12) Give an example of group elements $a$ and $b$ with the property that $a^{-1}ba \neq b$.

(7) (Gallian Chapter 2 # 22) Let $G$ be a group with the property that for any $x, y, z$ in the group, $xy = zx$ implies $y = z$. Prove that $G$ is Abelian.

(8) (Gallian Chapter 2 # 27) For any elements $a$ and $b$ from a group and any integer $n$, prove that $(a^{-1}ba)^n = a^{-1}b^n a$. 