Math 5370 **ALGEBRAIC STRUCTURES** Fall 2016
Dr. Duval **Homework**
Thursday, October 6

Written homework. None this week. (Study for the exam instead.)

Warmup exercises. To present in class.

Tuesday, October 11. 4.34, 4.37.

Reading assignment. These reading questions cover the rest of Section 4.3 (subsections on Units and Fields and on Subrings and Subfields).

1. Illustrate Proposition 4.39 when $m = 5$ and $m = 6$. In each case, identify which elements of $\mathbb{Z}_m$ have an inverse. For the ones that do have an inverse, find the inverse. (These examples are small enough that even guess and check is not a bad strategy).
2. The ring of 2×2 matrices with real coefficients was described on p. 156. What are the units of this ring?
3. Answer the query at the top of p. 166: Is $\mathbb{Z}_m$ a subring of Z? Why or why not?
4. Consider Example 4.47 when $X = \{p, q\}$. Make the addition and multiplication tables for the ring 2^X.