

## FOURTH HWK, DUE THURSDAY OCTOBER 16TH

Feel free to work with others, but the final write-up should be entirely your own and based on your own understanding.

1. (15 pts) (1.2.13) page 104.
2. (10 pts) (1.3.9) page 113.
3. (10 pts) (1.3.10) page 113.
4. (10 pts) (1.4.13) page 124. This problem contains a typo. I think Prob 1.2.2 should refer to (1.2.13) (i.e question 1).
5. (5 pts) Write down all invertible  $2 \times 2$  matrices with entries in  $\mathbb{F}_2$ .

**Just for fun:**

6. There is a field  $\mathbb{F}_4$  with four elements. Can you write down its addition and multiplication table? (*Hint: probably your first guess will be incorrect. It is better to use formal symbols for some of the elements.*)