Think of each problem set as a study aid, more so than just an assignment. To help with this, I'll list the main points that you should try to master in a given week at the top of the problem set, as "study guide," together with the relevant textbook section.

Study guide

- (§1.1) Know the three row operations, and understand why they don't change the solutions of a system of equations.
- Be familiar with the notation I like to use in class (which the book does not use): $R1+ = c \cdot R2, R1 \cdot = c$ and $R1 \leftrightarrow R2$ (when talking about rows of a matrix), or $E1+ = c \cdot E2$ (etc.) when discussing a list of equations.
- (§1.1) Practice solving linear systems by the elimination method.
- (§1.2) Know how to convert a system of equations to its augmented matrix and vice versa.
- (§1.2) Know the definition of "row echelon form" (REF) and "reduced row echelon form" (RREF).
- Be able to reason about row-reduction when there are some unknowns in the matrix (e.g. Exercises 1.1.43 and 1.2.49).

Textbook problems

- §1.1: 12, 14, 16, 43

- §1.2: 36, 38, 40, 48, 49

- *Suggestion (not to hand in):* Also try the odd-numbered problems from 9-19 and 21-27 in §1.2, and check your answers in the back of the book. These are fairly short, and will help you check your understanding of reduced echelon form.

- §1.8: 4

Supplemental problem (also to hand in)

1. (a) Give three examples of linear systems of 2 equations in 4 variables, as follows: one that is inconsistent, one where the general solution with two free variables, and one where the general solution has three free variables.
   (b) Explain why it is impossible for a linear system of 2 equations in 4 variables to have a *unique* solution. (*Hint:* think about where the pivots can occur after reducing to echelon form.)

Important notes:

- For full credit, you must show or explain your reasoning.
- See the second page of the course survey for instructions about submitting your work on Gradescope. Please ask me for help if you you find that it is taking you more than a couple minutes to scan and submit your work.
- After the assignment is graded, you will be able to view comments on your work on Gradescope. If you believe that there may have been an error in the grading, please use the "request regrade" button on Gradescope, which will automatically email both me and the grader. Regrade requests must be submitted within *one week of the due date* of the assignment.
- You are encouraged to work in groups while solving the problems, but all submitted work must be your own work in your own words. Use of solution manuals or online solution databases is plagiarism, and will result in a 0 on the assignment in addition to being reported to Community Standards.