INSTRUCTIONS.
Work the following problems and hand in your solutions. Your solutions must be TYPED.
You may work together with other people in the class, but you must each write and type your solutions independently. Please LIST all people that you collaborated with.
A subset of these problems will be selected for grading.

1. Exercise 3.23 on page 16 of the Chapter 3 lecture notes. Part (a) asks you to prove that a given set is a vector space. However, I’m going to change part (a). You still have to do parts (b)–(d) with proof, but for part (a), just answer without proof the following questions:

   (i) What is the rule for vector addition?
   (ii) What is the rule for scalar multiplication?
   (iii) What is the zero vector?
   (iv) What is the additive inverse of a vector $x$?

2. Exercise 3.39 on page 25 of the Chapter 3 lecture notes.

3. Exercise 3.40 on page 26 of the Chapter 3 lecture notes.

4. Exercise 3.50 on page 29 of the Chapter 3 lecture notes.

5. Exercise 3.55 on page 32 of the Chapter 3 lecture notes.