Linear Algebra
Assignment 1

Due Sunday at 11:59 PM

1   Directions

Complete the following problems showing all your work. You may use a calculator to check your work, but should write out (or TeX up) all the steps of your solution. Please upload your work as a single .pdf file in the course.

2   Problems

1. Find the general solution of the system below two ways: 1) row reduction by hand. 2) Verify your answer using any program or calculator of your choice. Clearly state which program you used and include a screen shot of your code and output.

$$\begin{bmatrix} 1 & 3 & 4 & 7 \\ 3 & 9 & 7 & 6 \end{bmatrix}$$

2. What would you have to know about the pivot columns in an augmented matrix in order to know that the linear system is consistent and has a unique solution? Explain in complete sentences and provide examples to justify your reasoning.

3. Consider the linear system

$$x_1 + hx_2 = 2$$
$$4x_1 + 8x_2 = k$$

   (a) Find values of h and k such that the system has no solution.

   (b) Find values of h and k such that the system has a unique solution.

   (c) Find values of h and k such that the system has infinitely many solutions.