Written Homework 1.1

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As part of your homework, you will be asked to work with the concepts you have learned about in each section. For this part of the homework, it is helpful to review the theorems, definitions and bold-faced words related to the key words in the exercise as they appear in the electronic textbook in MyLab and your notes. Read each question carefully and pay attention to all the key words.

Here is an example of a joke I recall from when I was young: What color is Napoleon's white horse? Before you open google to find out what color horse Napoleon rode, reread the sentence and look for the work "white". Some key words or phrases to look for in the questions below include "coefficient", "augmented", "at least two", and "consistent". It will be helpful to look through your notes and the e-textbook to see what these terms refer to in the context of a linear algebra course. Finally, always write your own solution and reference (cite) any source that gave you an idea of how to proceed.

1. Explain the difference between a coefficient matrix and an augmented matrix.

The coefficient matrix only has the coefficients of the variables in an array, however, the augmented matrix contains the right-hand side of the linear system(the constants) in the rightmost column.

2. If you know that a system of linear equations has at least two solutions, how many solutions must it actually have? Explain.

Since a line is defined by two points, if multiple lines intersect at two points, they must be the same line. Thus, if a system of linear equations has at least two solutions, they must have infinite, since the lines must be completely overlapping, as they are the same line.

3. How many solutions can a consistent system of linear equations have? Discuss the different possibilities.

A consistent linear system can either have one solution or infinite solutions. Two lines can have different slopes and thus intersect at some point, and never again(one solution). If the lines intersect more than once, then it must have infinite solutions, because the only way this is possible is if they are the same line.