Math 100—Homework 01

Due: Friday February 08

Name _____

Directions: please print this page, and put your solutions in the space provided.
If you need extra space, you can attach another sheet of paper.

1. Consider the matrix $A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 4 & 5 & 6 & 7 \\ 6 & 7 & 8 & 9 \end{bmatrix}$.

(a) Row reduce A to RREF and circle the pivots. **Make sure to show all work.**

(b) Use your answer to part (a) to solve the linear system that corresponds to A.

2. Solve the following linear system. **Make sure to show all work.**

$$\begin{aligned} x_1 - 3x_3 &= 8 \\ 2x_1 + 2x_2 + 9x_3 &= 7 \\ x_2 + 5x_3 &= -2 \end{aligned}$$

3. Consider the following system. Answer the following questions, making sure to show all work and explain your reasoning.

$$\begin{aligned} x_1 + hx_2 &= 2 \\ 4x_1 + 8x_2 &= k \end{aligned}$$

(a) Find values for h and k such that the system is inconsistent.

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

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