Math 2890 Homework 2 Due date: Sep 9

(1) Do problem 1 in sec 1.2 (p25 of the textbook).

(2) Find the general solutions of the system whose augmented matrix are given in the followings.

(a) $\begin{bmatrix} 0 & 1 & -5 & 6 \\ 1 & 2 & 1 & 5 \end{bmatrix}$ (b) $\begin{bmatrix} 3 & -4 & 2 & 0 \\ -9 & 12 & -6 & 1 \\ -6 & 8 & 4 & 0 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & -3 & 0 & -1 & 0 & -2 \\ 0 & 1 & 0 & 0 & -4 & 1 \\ 0 & 0 & 0 & 1 & 3 & 4 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

(d) $\begin{bmatrix} 1 & -2 & -7 & -12 \\ -1 & 1 & 3 & 6 \\ 2 & -2 & -7 & -13 \end{bmatrix}$.

(3) Choose h and $k$such that the following system has (a) no solution (b) a unique solution (c) many solutions. Give separate answers for each part. $\begin{cases} x_1 & +hx_2 & = 2 \\ 4x_1 & +8x_2 & = k \end{cases}$.

(4) Write a system of equations that is equivalent to the given vector equation. $x_1 \begin{bmatrix} 1 \\ -1 \\ 2 \end{bmatrix} + x_2 \begin{bmatrix} -2 \\ 1 \\ -2 \end{bmatrix} + x_3 \begin{bmatrix} -1 \\ 1 \\ -1 \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$.

(5) Write a vector equation that is equivalent to the given system of equations. $\begin{cases} x_1 & -x_2 & +4x_3 & = 2 \\ 4x_1 & +5x_2 & & = 3 \end{cases}$.