MATH 43 5th Quiz (take-home) due: September 26, 2007

NAME: _____
(Last, First)

1. Use Gauss-Jordan elimination to solve the following system. Include a clearly identified reduced row echelon matrix for the coefficient matrix; and a statement identifying which variables are leading variables and which variables are free variables.

$$\begin{aligned} 2x_1 + 2x_2 \quad\quad - 3x_4 \quad\quad &= 0 \\ -x_1 - \ x_2 + x_3 + x_4 - x_5 &= 2 \\ x_1 + \ x_2 + x_3 - 2x_4 - x_5 &= 2 \end{aligned}$$

2. If the augmented matrix of a system of equations can be reduced to the form given below, find all k for which the system is consistent. Find all k for which the system has infinitely many solutions.

$$[\,A \quad | \quad \vec{c}\,] = \left[\begin{array}{cc|c} 1 & -2 & 3 \\ 0 & -k^2+4 & -k+2 \end{array}\right]$$