MATH 280-01 (142)
HW # 1

Q1. Is $(6, 4, -2)$ a solution of the equation $3x_2 + x_3 - x_1 = 4$?

Q2. Solve the system

$$\begin{aligned} 3x_1 + 2x_2 - 5x_3 - 6x_4 + 2x_5 &= 4 \\ x_3 + 8x_4 - 3x_5 &= 6 \\ x_4 - 5x_5 &= 5 \end{aligned}$$

Q3. Determine the values of k so that the following system has:
(i) a unique solution
(ii) no solution
(iii) an infinite number of solutions

$$\begin{aligned} x_1 + x_2 - x_3 &= 1 \\ 2x_1 + 3x_2 + kx_3 &= 3 \\ x_1 + kx_2 + 3x_3 &= 2 \end{aligned}$$

Q4. Use Gauss-Jordan reduction to solve the system:

$$\begin{aligned} 2x_1 + 3x_2 - 2x_3 + 5x_4 &= 1 \\ 3x_1 - x_2 + 2x_3 &= 4 \\ 4x_1 - 5x_2 + 6x_3 - 5x_4 &= 7 \end{aligned}$$

Q5. Describe all the possible $2x2$ matrices which are in reduced row echelon form.