MAT 342: Homework 1 (08/30)

1 Section 1.1

Ex. 1)

$$b)\,(x_1, x_2, x_3) = (4, 1, 3) \quad c)\,(x_1, x_2, x_3, x_4) = (-2, 0, 3, 1)$$

Ex. 4)

$$a)\left[\begin{array}{cc|c} 1 & 1 & 4 \\ 1 & -1 & 2 \end{array}\right] \quad b)\left[\begin{array}{cc|c} 1 & 2 & 4 \\ -2 & -4 & 4 \end{array}\right] \quad c)\left[\begin{array}{cc|c} 2 & -1 & 3 \\ -4 & 2 & -6 \end{array}\right]$$

Ex. 6) [3pts]

$$e)\,(-3, 1, 2) \quad f)\,(-1, 1, 1) \quad g)\,(1, 1, -1).$$

1+1+1pt

Ex. 7) [2pts]

Using row elimination, we obtain:

$$\left[\begin{array}{cc|cc} 2 & 1 & 3 & -1 \\ 0 & 1 & -1 & 3 \end{array}\right].$$

1pt

Thus, the solutions are $(2, -1)$ and $(-2, 3)$.

.5+.5pt

Ex. 8) [3pts]

After row eliminations, we obtain:

$$\left[\begin{array}{ccc|cc} 1 & 2 & -2 & 1 & 9 \\ 0 & 1 & 5 & 7 & -9 \\ 0 & 1 & 6 & 8 & -11 \end{array}\right] \Rightarrow \left[\begin{array}{ccc|cc} 1 & 2 & -2 & 1 & 9 \\ 0 & 1 & 5 & 7 & -9 \\ 0 & 0 & 1 & 1 & -2 \end{array}\right].$$

2pts

Thus, the solutions are $(-1, 2, 1)$ and $(3, 1, -2)$.

.5+.5pt

Ex. 10) [2pts]

The linear system has always a solution: $x_1 = x_2 = 0$. Thus, the system is consistent.

2pts