MAT 532 — HOMEWORK 1

DUE ON THURSDAY 6 SEPTEMBER

1. Apply Gaussian elimination with back-substitution to solve the following system.

$$\begin{aligned} 3x_1 - x_2 &= 0 \\ -x_1 + 3x_2 - x_3 &= 0 \\ -x_2 + x_3 &= 1 \end{aligned}$$

2. Consider the following three systems where the coefficients are the same for each system, but the right-hand sides are different.

$$\begin{array}{rcrcrcc|c|c} 0x & + & 1y & + & 2z & = & 1 & 0 & 0 \\ 1x & + & 0y & + & 3z & = & 0 & 1 & 0 \\ 4x & - & 3y & + & 8z & = & 0 & 0 & 1 \end{array}$$

Solve all three systems at one time by performing Gaussian elimination on an augmented matrix with six columns.

3. # 1.2.11, page 13.

4. # 1.2.13, page 14.