

1. Consider the matrix

$$A = \begin{pmatrix} 1 & 3 & -1 & 2 & 1 \\ 3 & 9 & 0 & 7 & 5 \\ -1 & -3 & 7 & 0 & 7 \end{pmatrix}.$$

Determine the “special” solutions of the null space of this matrix.

2. For this same matrix  $A$ , show that  $\mathbf{x} = (1, 1, 1, 1, 1)$  is a solution of  $A\mathbf{x} = (6, 24, 10)$ . Find another solution of the form  $(?, 2, ?, 3, ?)$ . Describe all the solutions of  $A\mathbf{x} = (6, 24, 10)$ .