Practice problems.

(1) Find a basis for the subspace of $\mathbb{R}^3$ that is spanned by the set of vectors in the sequence

$$\left(\begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix}, \begin{bmatrix} 1 \\ -1 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ -1 \end{bmatrix}, \begin{bmatrix} 0 \\ -1 \\ 1 \end{bmatrix}, \begin{bmatrix} -1 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} -1 \\ 1 \\ 0 \end{bmatrix} \right).$$

What is the dimension of this subspace?

(2) What can you say about the dimension of the space of dependence relations of the sequence in (1)?