MA552. Quiz 4

Let H_2^2 be the linear space of matrices 2x2 over the field of real numbers.

1) Find the basis and dimension of the $L(A_1, A_2, A_3, A_4)$ subset of H_2^2 spanned by the following matrices:

$$A_1 = \begin{pmatrix} -1 & 1 \\ 2 & 3 \end{pmatrix}, A_2 = \begin{pmatrix} 1 & 1 \\ -1 & 1 \end{pmatrix}, A_3 = \begin{pmatrix} 1 & 3 \\ 0 & 5 \end{pmatrix}, A_4 = \begin{pmatrix} -2 & 0 \\ 3 & 2 \end{pmatrix}$$

2) Extend this basis to the basis of the space H_2^2