

Due Wednesday, Feb. 5, 2014

1. Let V be the vector space of 2×2 matrices over the field F .
 - a. Prove that V has dimension 4 by exhibiting a basis of four elements.
 - b. Let W_1 be the set of matrices of the form $\begin{pmatrix} x & -x \\ y & z \end{pmatrix}$ and let W_2 be the set of matrices of the form $\begin{pmatrix} a & b \\ -a & c \end{pmatrix}$. Prove that W_1 and W_2 are subspaces of V .
 - c. Find the dimensions of W_1 , W_2 , $W_1 + W_2$ and $W_1 \cap W_2$.
2. Page 48, #4
3. Page 52, #6.