

1er semestre 2016 Ej. 8

$$S_1 \Rightarrow \underline{A = A^t} : A = \begin{pmatrix} a & b \\ b & c \end{pmatrix} = a \begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} + b \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} + c \begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix}$$

$$S_2 \Rightarrow \text{tr}(A) = 0 : A = \begin{pmatrix} a & b \\ c & -a \end{pmatrix} = a \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix} + b \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix} + c \begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix}$$

$$(T : S_1 \rightarrow S_2$$

$$A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

PARA QUE $A \in S_1$

$$b = c$$

PARA QUE $A \in S_2$

$$a + d = 0$$

$$S_1 \cap S_2 = \{ A \in M_{2 \times 2} : b = c, a + d = 0 \} \rightarrow S_1 \cap S_2 : \begin{pmatrix} a & b \\ b & -a \end{pmatrix}$$

$$N(T) = S_1 \cap S_2 \rightarrow \dim N(T) = 2$$

$$\dim \overset{2}{N}(T) + \dim \text{Im}(T) = \dim S_1 = 3 \Rightarrow \dim \text{Im}(T) = 1$$