

MATH 205A,B - LINEAR ALGEBRA
WINTER 2013

QUIZ 6

NAME:

Section:(Circle one) A(1 : 10) B(2 : 40)

Show ALL your work CAREFULLY.

(a) Find an explicit description of the null space $\text{Nul}A$, by listing vectors that span the null space.

$$A = \begin{bmatrix} 2 & 1 & 0 & 1 \\ 1 & -1 & 3 & -1 \\ 0 & 1 & 2 & 0 \end{bmatrix}.$$

(b) Let $M_{2 \times 2}$ be the vector space of all 2×2 matrices with real entries. Define $T : M_{2 \times 2} \rightarrow M_{2 \times 2}$ by $T(A) = A + A^T$ where $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$. Show that T is a linear transformation. [A vector here is a 2×2 matrix.]