

**MATH 205A,B - LINEAR ALGEBRA
FALL 2015**

QUIZ 4

NAME: _____ **Section:**(Circle one) A(8 : 00) B(9 : 30)

Show ALL your work CAREFULLY.

Let $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ be a linear transformation defined by

$$T(x_1, x_2) = (3x_1 - x_2, 2x_1 - x_2).$$

(a) Find all vectors \vec{x} such that $T(\vec{x}) = \vec{0}$.

(b) Is T one to one? Explain.

(c) Find the matrix A of T so that $T(\vec{x}) = A\vec{x}$.

(d) Is the matrix A invertible? If so, find A^{-1} .