

**MATH 205A,B - LINEAR ALGEBRA
WINTER 2013**

QUIZ 4

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

Show ALL your work CAREFULLY.

Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^2$ be a linear transformation defined by

$$T(x_1, x_2, x_3) = (2x_1 - 3x_2 + x_3, 4x_3 - x_1).$$

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

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

(c) Is T one to one? Explain.