

MATH 205A,B - LINEAR ALGEBRA
FALL 2015

QUIZ 7

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

Show **ALL** your work **CAREFULLY**.

(a) Find the coordinate vector $[\vec{x}]_{\mathbf{B}}$ relative to the basis $\mathbf{B} = \{\vec{b}_1, \vec{b}_2\}$ where

$$\vec{b}_1 = \begin{bmatrix} -1 \\ 3 \end{bmatrix}, \vec{b}_2 = \begin{bmatrix} -1 \\ 2 \end{bmatrix}, \text{ and } \vec{x} = \begin{bmatrix} -2 \\ 1 \end{bmatrix}.$$

(b) Find a basis for the column space $\text{Col}A$ of the matrix A where

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

What is the dimension of $\text{Nul}A$?