

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

QUIZ 7

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

**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

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

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

$$A = \begin{bmatrix} 2 & -3 & 2 & 1 \\ 0 & 1 & -4 & 8 \\ 5 & -8 & 7 & 1 \end{bmatrix}.$$

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