Name:_____

Student ID #:_____

Mini-Quiz # 11

MAT-022A-Summer Session II (9/4/09)

You have 15 minutes. You may only use a pencil (or pen) and scrap paper.

1. Let A be a 3×3 invertible matrix which has 2 as an eigenvalue with an associated eigenvector $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ and -1 as an eigenvalue with an associated eigenvector $\begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix}$. Now compute the following. (2 points each)

   (a) $A^{-1} \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$

   (b) $A \begin{bmatrix} 0 \\ 1 \\ 3 \end{bmatrix}$

(c) Compute the eigenvalues and basis for the associated eigenspaces for the following matrix (6 points)

$$\begin{bmatrix} 3 & 0 & 0 \\ 1 & 2 & 1 \\ 0 & 0 & 3 \end{bmatrix}$$