

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

QUIZ 8

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

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

Let

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

(a) The matrix A has 3 as one of its eigenvalues. Find the other eigenvalues of A .

(b) Find a basis for the eigenspace of A corresponding to the eigenvalue $\lambda = 3$.

(c) Determine the rank of the matrix $(A - 3I)$. [Hint: what is the dimension of the eigenspace as in part (b)?] Justify your answer.