

Remember that your work is graded on the quality of your writing and explanation as well as the validity of the mathematics.

(1) (10 Points) Is  $\lambda = 3$  an eigenvalue of  $\begin{bmatrix} 4 & 2 & 3 \\ -1 & 1 & -3 \\ 2 & 4 & 9 \end{bmatrix}$ ? If so, find one corresponding eigenvector.

(2) (10 Points) Find the characteristic polynomial and all eigenvalues of matrix  $\begin{bmatrix} 5 & -2 & 3 \\ 0 & 1 & 0 \\ 6 & 7 & -2 \end{bmatrix}$ .