

This is a two-stage quiz. You will receive this back with each question graded pass/fail in our next class meeting. You have until the date specified above to submit corrections for partial credit.

1. (4 points) Consider the matrix

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

- (i) (2 points) Find the eigenvalues of A .

- (ii) (2 points) Give an eigenvector for each eigenvalue you found in part (i).

2. (6 points) Consider the matrix

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

(i) (2 points) Give the characteristic polynomial of A .

(ii) (2 points) Give the eigenvalues of A along with their multiplicities.

(iii) (2 points) Find a basis for the eigenspace of the least eigenvalue of A .