Math 2210-006/011 Quiz 10 Name: _____ Due: 12/2/19 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) Find the eigenvalues of A.

(ii) 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) Give the characteristic polynomial of A.

(ii) Give the eigenvalues of A along with their multiplicites.

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