

Name: _____

Due April 18, 2002

Quiz 14

Justify all your work. Partial credit will be given if you show your reasoning.

(1) Let

$$A = \begin{bmatrix} 1 & 0 & -1 \\ 1 & -3 & 0 \\ 4 & -13 & 1 \end{bmatrix}.$$

Find a basis for the eigenspace corresponding to the eigenvalue $\lambda = -2$ of A (i.e., You may assume $\lambda = -2$ is an eigenvalue for A . You need to find the basis for the corresponding eigenspace).

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(2) Let

$$A = \begin{bmatrix} 4 & 0 & 0 & 0 \\ 0 & 4 & 0 & 0 \\ 1 & 0 & 2 & 0 \\ 1 & 0 & 0 & 2 \end{bmatrix}.$$

- (a) Find **and solve** the characteristic equation of A .
- (b) List the multiplicity of each eigenvalue.
- (c) Find a basis for the eigenspace corresponding to each eigenvalue.