

Quiz 5(10 pts)

Math 220, Spring 2008

Due 12:20 am Tuesday, April 22

NAME:

SHOW YOUR WORK!

Problem 1. Which of the vectors $\begin{pmatrix} 4 \\ -3 \\ 2 \end{pmatrix}$, $\begin{pmatrix} 4 \\ -3 \\ 1 \end{pmatrix}$, $\begin{pmatrix} 4 \\ -3 \\ 0 \end{pmatrix}$ is an eigen-
vector of $\begin{pmatrix} 2 & 1 & 7 \\ 0 & 4 & 3 \\ 1 & 1 & 2 \end{pmatrix}$. What is the eigenvalue?

Problem 2. Find the characteristic polynomial of the matrix:

$$\begin{pmatrix} 0 & 1 & -1 \\ -1 & 1 & 2 \\ 1 & -1 & 2 \end{pmatrix}$$

Problem 3. Let $A = \begin{pmatrix} 1 & 2 \\ -1 & 4 \end{pmatrix}$. Find eigenvalues and at least one eigenvector for each eigenvalue. Find matrices P and D where D is a diagonal matrix such that $A = PDP^{-1}$

Problem 4. Let $A = \begin{pmatrix} 2 & 1 & 1 & 1 \\ 0 & 3 & 0 & 1 \\ 0 & 0 & 3 & 1 \\ 0 & 0 & 0 & 3 \end{pmatrix}$. Find all eigenvectors for $\lambda = 3$. Is it a line, or a plane, or a 3d-space?