(6)   1.   Complete the definition.

Suppose v_1, v_2, ... and v_t are vectors in $\mathbb{R}^n$. Then v_1, v_2, ... and v_t are called *linearly independent* if

(18)   2. Suppose that $A = \begin{pmatrix} -1 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & -1 \end{pmatrix}$.

a) Compute the characteristic polynomial of A.

b) Find the eigenvalues of A.

c) Find a basis of $\mathbb{R}^3$ consisting of eigenvectors of A.

d) Find a diagonal matrix D and an invertible matrix P so that $P^{-1}AP = D$.

e) Find P^{-1}.

f) Compute $Z = AP$.

g) Compute $P^{-1}Z$ using the results of e) and f).

Problems for extra credit on the second exam in Math 421, section 2

May 11, 2004

NAME ─────────────────────────

Do all problems, in any order.

Show your work. An answer alone may not receive full credit.

No calculators may be used on this exam.

Problem Number	Possible Points	Points Earned:
1	6	
2	18	
Total Points Earned:		