

**Exam 3**

Linear Algebra, Dave Bayer, 8:40 AM, April 16, 2013

Name: \_\_\_\_\_ Uni: \_\_\_\_\_

[1]	[2]	[3]	[4]	[5]	Total

If you need more than one page for a problem, clearly indicate on each page where to look next for your work.

[1] Compute the determinant of the matrix

$$A = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 \\ 1 & 4 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 9 & 1 \end{bmatrix}$$

[2] Find  $w/z$  where

$$\begin{bmatrix} 1 & 2 & 3 & 4 \\ 0 & 1 & 2 & 3 \\ 0 & 0 & 1 & 2 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} w \\ x \\ y \\ z \end{bmatrix} = \begin{bmatrix} a \\ b \\ c \\ d \end{bmatrix}$$

[3] Compute  $A^n$  for the matrix

$$A = \begin{bmatrix} -1 & 1 \\ 5 & 3 \end{bmatrix}$$

[4] Find the eigenvalues and corresponding eigenvectors of the matrix

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

[5] Compute  $A^n$  for the matrix

$$A = \begin{bmatrix} -1 & 2 & -4 \\ -1 & 2 & 2 \\ 0 & 0 & 3 \end{bmatrix}$$