MATH 121

HOMEWORK 14, DUE DECEMBER 8 5PM IN PATRICK RYAN'S BOX

Graded HW can be picked up on December 9 at Patrick's office hour or the discussion of the practice final.

Part I

(1) Prove that the matrix

$$A = \begin{pmatrix} 0 & 5 & 1 & 0 \\ 5 & 0 & 5 & 0 \\ 1 & 5 & 0 & 5 \\ 0 & 0 & 5 & 0 \end{pmatrix}$$

has two positive and two negative eigenvalues (counting multiplicities). You can assume that all the eigenvalues of A are real.

(2) Axler, page 245, Problem 13.

(3) Axler, page 245, Problem 14.

(4) Axler, page 246, Problem 25.