

The following exercises are from the corresponding sections of the UC Berkeley custom edition of Lay, Nagle, Saff, & Snider, Linear Algebra and Differential Equations. Note that the section numbers and problem numbers ARE NOT the same as in Lay, Linear Algebra.

Exercises 3.2: 29, 31, 35, 44

Exercises 3.3: 1, 13, 14

Exercises 4.1: 9, 13, 16, 20, 21, 32, 33

Exercises 4.2: 3, 15, 30, 31, 32, 34, 35

Additional Problems:

1. Show that if A is invertible and both A and A^{-1} have only integer entries, then $\det A = \pm 1$.
2. Let A_n be an $n \times n$ matrix with 1's on the diagonals immediately above and below the main diagonal, and zeroes elsewhere. For example,

$$A_5 = \begin{pmatrix} 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 0 \end{pmatrix}.$$

Show that $\det A_n = (-1)^{n/2}$ if n is even and 0 if n is odd.