Assignment 4 – MA 142

Due in class: Wednesday, Oct. 14, 2009

All exercises are taken from the textbook (Lay's *Linear Algebra and its Applications*, Third Edition) except exercise (†) which refers to the book.

Note: More problems have been added to sections 2.2 and 2.3 versus what had been handed out on assignment 3.

Section 2.2: 4, 14, 32, and 16, 34*, 38 and the following

(†): For the matrix in question 32 (of section 2.2), call it A, find elementary matrices $E_1, \ldots, E_k$ such that $E_k E_{k-1} \cdots E_2 E_1 = A^{-1}$.

*Hint for 34: What they mean is to use the algorithm to find the inverses of

$$\begin{pmatrix} 1 & 0 & 0 \\ 1 & 2 & 0 \\ 1 & 2 & 3 \end{pmatrix} \text{ and } \begin{pmatrix} 1 & 0 & 0 & 0 \\ 1 & 2 & 0 & 0 \\ 1 & 2 & 3 & 0 \\ 1 & 2 & 3 & 4 \end{pmatrix}$$

and use the pattern you get from this to guess the answer for the matrix they call A. Then, explain how multiplying A by your guess gives I_n, the $n \times n$ identity matrix.

Section 2.3: 4, 8, 16, 34 and 13, 14

Section 2.8: 1, 2, 3, 4, 8, 12, 14, 16, 18, 20, 22, 26, 36