Math 416 - Abstract Linear Algebra
Fall 2011, section E1
Additional problems

Section 2.4

A4.1. Consider the 2×2 matrix $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ and assume $ad - bc \neq 0$.

a. Assuming $a \neq 0$, find A^{-1} using row reduction.

b. Check that your formula is correct by computing AA^{-1} or $A^{-1}A$. (Note that it works even in the case $a = 0$.)

A4.2. Below are elementary matrices E, corresponding to row operations. Given a $3 \times n$ matrix $A = \begin{bmatrix} R_1 \\ R_2 \\ R_3 \end{bmatrix}$, find the matrix EA in each case.

a. $E = \begin{bmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

b. $E = \begin{bmatrix} 6 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

c. $E = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & -5 \\ 0 & 0 & 1 \end{bmatrix}$