MATH 320, Spring 2013, Assignment 6
Textbook Questions

Section 3.4, #3 Compute $cA + dB$ for

$$A = \begin{bmatrix} 5 & 0 \\ 0 & 7 \\ 3 & -1 \end{bmatrix}, B = \begin{bmatrix} -4 & 5 \\ 3 & 2 \\ 7 & 4 \end{bmatrix}, c = -2, d = 4.$$

Section 3.4 Two matrices A and B are given. Calculate whichever of the matrices AB and BA is defined.

#5

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

#8

$$A = \begin{bmatrix} 1 & 0 & 3 \\ 2 & -5 & 4 \end{bmatrix}, B = \begin{bmatrix} 3 & 0 \\ -1 & 4 \\ 6 & 5 \end{bmatrix}$$

#12

$$A = \begin{bmatrix} 1 & 0 & 3 & -2 \end{bmatrix}, B = \begin{bmatrix} 2 & -7 & 5 \\ 3 & 9 & 10 \end{bmatrix}$$

Section 3.4, #16 Verify that $A(BC) = (AB)C$ for the following matrices:

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

Section 3.4, #21 State the solution of the following linear system in vector form:

$$\begin{aligned} x_1 \qquad - x_3 + 2x_4 + 7x_5 &= 0 \\ x_2 + 2x_3 - 3x_4 + 4x_5 &= 0. \end{aligned}$$

Section 3.5, #6 Compute A^{-1} and then use it to solve $A\vec{x} = \vec{b}$ for

$$A = \begin{bmatrix} 4 & 7 \\ 3 & 6 \end{bmatrix}, \vec{b} = \begin{bmatrix} 10 \\ 5 \end{bmatrix}$$

Section 3.5 Find the inverse A^{-1} for the following matrices A:

#13

$$A = \begin{bmatrix} 2 & 7 & 3 \\ 1 & 3 & 2 \\ 3 & 7 & 9 \end{bmatrix}$$

#22

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

Section 3.5, #30 Suppose that A, B, and C are invertible matrices of the same size. Show that the product ABC is invertible and that $(ABC)^{-1} = C^{-1}B^{-1}A^{-1}$.