MATH 320, Spring 2013, Assignment 7

Textbook Questions

Section 3.6, #6 Use cofactor expansions to evaluate the following determinant. Exapdn along the row or column that minimizes the amount of computation that is required.

$$\begin{vmatrix} 3 & 0 & 11 & -5 & 0 \\ -2 & 4 & 13 & 6 & 5 \\ 0 & 0 & 5 & 0 & 0 \\ 7 & 6 & -9 & 17 & 7 \\ 0 & 0 & 8 & 2 & 0 \end{vmatrix}$$

Section 3.6, #16 Use any method you like to evaluate the following determinant:

$$\begin{vmatrix} 2 & 4 & -2 \\ -5 & -4 & -1 \\ -4 & 2 & 1 \end{vmatrix}$$

Section 3.6, Use Cramer's rule to solve the following systems:

#21

$$\begin{aligned} 3x + 4y &= 2 \\ 5x + 7y &= 1 \end{aligned}$$

#30

$$\begin{aligned} x_1 + 4x_2 + 2x_3 &= 3 \\ 4x_1 + 2x_2 + x_3 &= 1 \\ 2x_1 - 2x_2 - 5x_3 &= -3 \end{aligned}$$

Section 3.6, #37 Apply Theorem 5 (adjoint form of inverse) to compute A^{-1} for

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

Section 3.6, #52 The square matrix A is called **orthogonal** provided that $A^T = A^{-1}$. Show that the determinants of such a matrix must be either $+1$ or -1.