

Math 122-002 201730  
Practice Assignment # 7

*Please remember that the assignment consists of only a sample of the kind of questions you are supposed to be able to do. It is **not** a safe practice to just do the assignment, and that is why there is a list of “suggested practice problems”.*

1. Calculate the determinant by the first column.

(a)  $\begin{bmatrix} 2 & 2 & 2 \\ -2 & 5 & 2 \\ 8 & 1 & 4 \end{bmatrix}$

(b)  $\begin{bmatrix} 1 & 3 & -2 \\ 3 & 2 & -1 \\ -3 & 5 & -4 \end{bmatrix}$

(c)  $\begin{bmatrix} 0 & 2 & 2 & 4 \\ 1 & 0 & 1 & 2 \\ 1 & 2 & 1 & 1 \\ 2 & 1 & 2 & 2 \end{bmatrix}$

2. For the same matrices as in the previous question, calculate the determinant by row/column reduction.
3. Find the inverse using the adjugate formula

(a)  $\begin{bmatrix} 1 & 0 & 0 \\ 2 & 3 & 0 \\ 4 & 5 & 6 \end{bmatrix}$

(b)  $\begin{bmatrix} 0 & 2 & 2 \\ 1 & 0 & 1 \\ 2 & 3 & 1 \end{bmatrix}$

4. For each matrix in the previous question, use Cramer’s rule to solve the system

$$A\mathbf{x} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$$

5. Evaluate the determinant “by inspection” (that is, you should be able to do it without writing any computations). Explain your reasoning.

(a)  $\begin{bmatrix} 1 & 0 & 0 \\ 2 & 3 & 0 \\ 4 & 5 & 6 \end{bmatrix}$

(b)  $\begin{bmatrix} 1 & 0 & 2 \\ 2 & 3 & 4 \\ 4 & 5 & 8 \end{bmatrix}$

6. Evaluate the determinant by first multiplying and dividing by a suitable number to eliminate the fractions.

(a)  $\begin{bmatrix} 1/2 & 1/3 & 1/4 \\ 2/5 & 3/7 & 0 \\ 4/7 & 5/8 & 6 \end{bmatrix}$

(b)  $\begin{bmatrix} 1/3 & 0 & 2/9 \\ 2/7 & 3/11 & 4 \\ 4 & -5/3 & 8 \end{bmatrix}$