King Saud University
Department of Mathematics
Second Semester 1445 H

MATH 244 (Linear Algebra)
Assignment
To be submitted on or before 6-11-1445
14-5-2024

Student Name	Student ID

Question Number	I	II	Total
Mark			

Instructions

- Use any trusted source of information with proper citation and no plagiarism
- Work on this assignment as groups of three

Question[I]

(i) What is MATLAB?

(ii) For $A = \begin{bmatrix} 2 & 1 & 7 \\ 3 & 4 & 3 \\ 0 & 5 & -1 \end{bmatrix}$, $C = \begin{bmatrix} 1 & 3 & -2 & 0 \\ 2 & 6 & -5 & 2 \\ 0 & 0 & 5 & 10 \\ 2 & 6 & 0 & 8 \end{bmatrix}$, $\boldsymbol{b}_1 = \begin{bmatrix} 1 \\ 0 \\ 4 \end{bmatrix}$, $\boldsymbol{b_2} = \begin{bmatrix} 0 \\ -1 \\ 3 \\ 5 \end{bmatrix}$, use MATLAB functions to compute

(a) The Reduced Row Echelon Form of the augmented matrices $[A|\boldsymbol{b}_1]$ and $[C|\boldsymbol{b}_2]$.
(b) $\det(A)$, A^{-1}, A^2, A^T, $\det(C)$.
(c) The solutions $\boldsymbol{x}$ and $\boldsymbol{y}$ of the linear systems $A\boldsymbol{x} = \boldsymbol{b}_1$ and $C\boldsymbol{y} = \boldsymbol{b}_2$

Question[II]

Read Section 10.9 or Section 10.14 in *Elementary Linear Algebra* Applications Version book, the 11th Ed. Then, in no more than three A4 pages, answer **ONE** of the following questions:

(a) How is Linear Algebra related to Computer Graphics?
(b) How is Linear Algebra related to Cryptography?

Good Luck ☺