King Saud University
Department of Mathematics
1st Semester 1435-1436 H

MATH 244 (Linear Algebra)
1st Assignment
To be submitted on or before 15-2-1436 H

Student's Names	Student's IDs	Group No.

Question No.	I	II	III	Total
Mark				

Instructions.

1. Work on this assignment as groups of two.
2. Attempt two out of the three given questions.
3. Use any trusted source of information to handle this assignment with proper citation and no plagiarism.

[**I**]

(i) What is MATLAB?

(ii) For $A = \begin{bmatrix} 1 & 0 & 1 & 0 & 1 \\ 0 & 1 & 1 & 0 & 3 \\ 2 & 1 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 2 \\ 1 & 1 & 1 & 2 & 1 \end{bmatrix}$ and $\mathbf{b} = \begin{bmatrix} 1 \\ 0 \\ -1 \\ 2 \\ 3 \end{bmatrix}$, use MATLAB functions to compute the following:
$\det(A)$, A^{-1} and the solution $\mathbf{x}$ of $A\mathbf{x} = \mathbf{b}$.

OVER

[II] Given a matrix A and a vector $\mathbf{b}$, Write a MATLAB function that finds the number of solutions $\mathbf{x}$ for $A\mathbf{x} = \mathbf{b}$.
(Hint: The function can return 1 if there is a unique solution, 0 if there are no solutions, and -1 if the solution is not unique).

The function inputs are:

- A: $m \times n$ matrix
- $\mathbf{b}$: $m \times 1$ vector

The output is the number of solutions of $A\mathbf{x} = \mathbf{b}$, i.e.

- 1 : there is a unique solution
- 0 : there is no solution
- -1: there are infinitely many solutions

OVER

[III] Read §2.4 *(How Google Search Works?)* on the following link:

`http://www.math.ucsd.edu/~math20f/Fall/Lab2/Lab2.shtml`

Then answer the following question briefly: **What** is Google matrix?

GOOD LUCK