Fall 2023 MTH501: Linear Algebra

Assignment No. 2 (Lectures # 23 to 28) Total Marks:10

Due Date: January 12, 2024

Section: Lubna Mustafa

Please read the following instructions carefully before attempting the solution of this assignment:

(1) To solve this assignment, you should have good command over **23 to 28 lectures**.

(2) Try to consolidate your concepts that you learn in the lectures with these questions.

(3) **Upload your assignment properly through VULMS.** No Assignment will be accepted through emails.

(4) First of all, you should download the uploaded question file. Next, you will prepare the solution of assignment on Word file. Finally, **submit** your own solution file in VULMS.

- Understand the problem then solve it according to the statements (requirements) of the questions.
- If you do not solve the questions by the method that is asked (required) in the problems then the marks will be deducted (or could be zero).

(5) Do not use colorful backgrounds in your solution files.

- All the students are directed to use the font and style of text as is used in this document i.e. the font size/style should be preferably 12 Times New Roman with black font color.
- The assignments should be zoomed in at 100%.

(6) Use MathType or Equation Editor etc. for writing the proper mathematical symbols/expressions and equations.

- In MS-Word, to type an equation from scratch, press **Alt +=** on your keyboard or choose **Insert --> Equation** and select **Insert New Equation** from the bottom of the built in equation gallery. This inserts an equation placeholder where you can type your equation. It is recommended to visit the following link for more detail:
- https://support.microsoft.com/en-us/office/write-an-equation-or-formula-1d01cabc-ceb1-458d-bc70-7f9737722702#ID0EAACAAA=Write_new_equation
- Remember that you are supposed to submit your assignment only in the **MS-Word format**, any other format like scanned, images, PDF, MS-Excel, HTML etc. will not be accepted.

(7) Plagiarism in the submitted assignment will lead to a zero grade.

(8) Corrupt files will be given zero marks.

(9) This is an individual assignment (not a group assignment). So keep in mind that you are supposed to submit your own, self-made and different assignments even if you discuss the questions with your class fellows. All the similar assignments (even with some meaningless modifications) will be awarded zero marks and no excuse will be accepted. This is your responsibility to keep your assignment safe from others.

✓ **The relevant assignment file can be downloaded from the announcement section of the course. It is important to note that students can only view the announcements relevant to their respective sections. Furthermore, if any student submits a solution file that is not relevant to their section, they will receive a zero grade.**

Up to 50% marks might be deducted for those assignments which are received after the due date.

Question: 1 **Marks: 5**

Show that 5 is an eigenvalue of $A = \begin{bmatrix} 3 & 4 \\ 2 & 1 \end{bmatrix}$, find the corresponding eigenvectors.

Question: 2 **Marks: 5**

Determine whether the signals, 2^k , $4^k, and$ $(-3)^k$ are linearly independent or not.