MATH18584 Fundamentals ofComputer Mathematics – Assignment4
Type: Individual Assignment

Instructions:

- Answer the questions below, showing all relevant work and the methods used to obtain your results.
- Submit your answers on SLATE by the due date specified.
- Answers may only be submitted in the following formats:
  - ☐ Microsoft Word Document (.docx)
  - ☐ Adobe PDF Document (.pdf)
- If you are submitting handwritten answers, scan them and submit them as a single PDF file.
- This is an individual assignment. Assignments copied in whole or in part will receive a grade of ZER0.

Questions:

1. (10 marks) For the matrices:

$$A=\begin{bmatrix}2\\3\end{bmatrix},\ B=\begin{bmatrix}5\\-1\end{bmatrix},\ C=\begin{bmatrix}2&4\\1&3\end{bmatrix},\ D=\begin{bmatrix}1&3&5\\2&0&1\end{bmatrix},\ E=\begin{bmatrix}1&2&0\\0&3&2\\1&1&2\end{bmatrix}$$

Evaluate the following operations, and <u>show your work</u> .

$A+B$

CB

DE

C^{-1}

$\det(E)$

E^{-1}

The angle between A and B

2. (2marks) If $P=\begin{bmatrix}2&3\\a&b\end{bmatrix}$, $Q=\begin{bmatrix}1&1\\0&1\end{bmatrix}$, PQ = QP then find the values of a and b.

3. (4 marks) Determine the "combo matrix" that represents rotating clockwise by 45°, then stretching along the x-axis by a factor of 6, then stretching along the y-axis by a factor of 0.5,then reflection about the x-axis.
Apply these transformation combo matrix for the vector $A=\begin{bmatrix}2\\-1\end{bmatrix}$

4. (4 marks) Solve the system of equations using inverse matrix method.

a) $3x + 2y = -2$
$x + 4y = 6$

b) $2a - c = 1$
$2a + b = 1$
$b + c = 0$