2020 – 2021 Spring, CSA CRN:25203
Assignment 2

Rules:

1) Your homework should be hand-written on A4 paper.
2) Have at least 2,0 cm margin from the edges.
3) Each page of the solution has to be numbered and should have name, last name, student ID number and signature on top right corner.
4) Assignments in PDF format are required to be uploaded to the Ninova system before the deadline. There won't be extra time for uploading the assignments.
5) The students are expected to work on the solutions on their own. The points of identical or very similar looking assignments will be divided to the number of such assignments.

Find the zero input response of $V_C(t)$ and $i_L(t)$ for the state equations given below.
Use diagonalization by similarity transformation.

$V_C(0) = 0V$, $i_L(0) = 1A$, $e(t) = u(t)$

$$\frac{d}{dt}\begin{bmatrix} V_C(t) \\ \\ i_L(t) \end{bmatrix} = \begin{bmatrix} \frac{1}{2} & \frac{5}{2} \\ \\ -\frac{9}{8} & -3 \end{bmatrix}\begin{bmatrix} V_C(t) \\ \\ i_L(t) \end{bmatrix} + \begin{bmatrix} 2 \\ \\ 3 \end{bmatrix} e(t)$$