Assignment 4

Due September 26, 2024 at 5pm

Please complete the following steps in MATLAB:

1. Create a script called "LastNameLab4" (e.g. AnastasiadisLab4 for me).

2. For the following system of equations, use the command **ezplot** to determine if the linear system has a solution. Estimate the solution, if only one solution exists, with the comment '%' or edit the script file. Otherwise, indicate how many solutions exist.
   After that, solve the system of equations using the reduced row echelon function (*rref*). The reduced row echelon form is going to help you deduce if the solution is unique (in that case write down the unique solution) , if there is no solution (in that case write down " the system is impossible ") or if there are infinitely many solutions (in that case write down the form of the solutions and what is the free variable(s)).

   (a)
   $$\begin{aligned} -x + 2y &= 3 \\ 2x - 4y &= -6 \end{aligned}$$

   (b)
   $$\begin{aligned} x - 7y &= -11 \\ 5x + 2y &= -18 \end{aligned}$$

3. Set up the system of equations to solve ONLY ONE of the following magic matrices. Follow the instructions to see which matrix to solve:
   If your last name starts from A,B,C,D,E,F,G or H then use the first matrix. If your last name starts from I,J,...,P then use the second matrix. If your last name starts from Q,R,...,Z then use the third matrix.

   Use the comment '%' to write out the equations. Explicitly write the magic matrix in your file.
   $$\begin{pmatrix} 8 & 3 & 4 \\ ? & ? & ? \\ ? & ? & ? \end{pmatrix}, \begin{pmatrix} ? & ? & ? \\ ? & ? & ? \\ 1 & 5 & 9 \end{pmatrix}, \begin{pmatrix} ? & ? & 2 \\ ? & ? & 7 \\ ? & ? & 6 \end{pmatrix}$$
   Notice that this problem is easier than the one we saw in class, since you now know the fixed sum of the columns/rows/diagonals.

4. Run all the sections , save your script, export it as a pdf with the appropriate name and submit it on Blackboard. The results of the commands should be part of your pdf.