Instructions

For ALL problems in this homework and subsequent Matlab work, you must comment your work completely but succinctly. Remove unnecessary comments that may be present from previous work, and add any and all comments to fully document your current work.

What to hand in
- The work in Matlab that you use to get the results and/or answers. This can be in the form of
    - a script (.m) file, that is well documented (commented), OR
    - the text captured by using the `diary` command, to which you have added comments and removed unnecessary text, characters and spaces (or text capture simply by using copy and paste from the Matlab window)
- The results and/or answers to each problem. (Note that for problem 2, these could be the same file if you use the `diary` command.)

Problems

Problem 1: Circuit analysis
Find i_1, i_2 and i_3 in the circuit below, by
- writing the mesh-current equations by inspection and putting these into the matrix equation format (See section 3.6 from the EGR 220 text for review if needed)
- typing the matrix equation into Matlab
- solving for the currents in Matlab
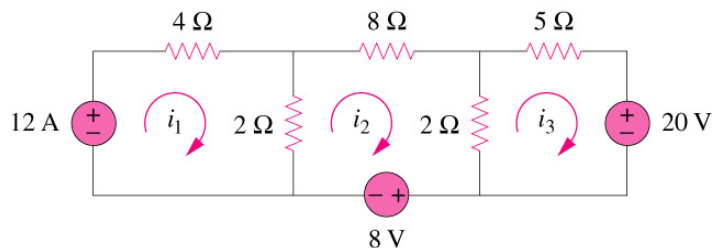
Problem 2: Matrix manipulation
- Matrix A: Create a 4x4 matrix (the elements, rows and columns can be simple, but not all the same)
- Matrix B: Matrix A with row 3 removed
- Matrix C: Columns 1 and 2 from matrix A
- Matrix D: The center 4 elements of matrix A
- Matrix E: A 4x4 matrix with only the diagonal elements from matrix A (and all other elements equal to 0). Note that you can do this with a single command. Use some guess work and the Matlab help command to find the appropriate command to use.
- Vector F: Create a 7 x 1 vector (note this is not a 1 x 7 vector – you may want to use the transpose operator) where the starting value is 2, the ending value is 5 and the step between the data points is 0.5.

Problem 3:　2-D plotting
Create any interesting 2-D plot (Note that a straight line is not interesting for this problem.)
- Include more than one data set or function on the plot.
- Include a title, axis labels and a legend.
- Include line-color and plotting symbol or type-of-line specifiers (such as the 'b--' which was the third argument in the class example)
- If necessary to improve the plot appearance, set the axis scales (*i.e.,* the beginning and ending values on the axes)

In order to capture your plot for pasting into a word or other document, an easy procedure is as follows
- Maximize the plot so that it covers your entire screen
- Screen Capture:　Hold down the weird 'windows' key (between the Alt and Ctrl keys in the lower left of most keyboards) and press the 'Print Screen/SysRq' key in the upper right of the key board. You now have a copy of the screen display in the clipboard.
- Open or activate the document of interest and paste your plot into it.　You are likely to need to resize your plot once it has been pasted into your document.

Problem 4:　3-D plotting
Create any interesting 3-D plot.　Label this plot as above. You can use mesh(), surf() or any other 3-D plotting function you like.