AER 336S: Problem 3

Please comment all functions and scripts and hand in with your assignment. All figures should have your name in the title and should have proper legends and labels.

Write a MATLAB function for solving pentadiagonal linear systems of equations (without pivoting). Write a script which demonstrates that your solver gives the correct answer by comparing with the MATLAB result obtained using the backslash command. Calculate the number of flops required as a function of the matrix size and display the results on a log-log plot. Include the flop count obtained using the `lu` command on your plot. Next write a MATLAB function for solving *block* pentadiagonal systems. For any block inversions, you can use built-in functions. Again verify that it works. Using block sizes of 2 through 4, plot the dependence of the flop count on the block size.