Homework sheet 3

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- Solve the following one dimensional Poisson problem on $[0, 1]$:

$$-\frac{d^2u}{dx^2} = 1, \quad u(0) = 0, \quad u'(1) = 3.$$

  Make sure to use the "toeplitz" command to generate the matrix for the linear system.

- Plot the solution (remember to label the axes!).

- Now modify your code to solve the one dimensional Helmholtz problem on [0,1]:

$$-\frac{d^2u}{dx^2} + u = 1, \quad u(0) = 0, \quad 2u(1) + u'(1) = 3.$$

- Again, plot the solution.

- Submit the code that you used to solve each problem. Remember to append your name or initials at the end of each Matlab filename, and submit the work to *both* tutors.