

Pset2: Boundary value problem.

- a) Consider a 2D Poisson equation as discussed in class. Suppose we have  $n_x$  unknowns in  $x$  and  $n_y$  unknowns in  $y$ . Set up the corresponding linear algebra problem:  $Au=f$ .
- b) Write a code to solve the equation (For example,  $f=1$ , fixed-fixed boundary conditions,  $n_x=n_y=N$ ).
- c) Make a 2D plot to show your solution.

(Hint: To transform the column vector  $u$  back to a 2D array and then make a contour plot, you may consider the Matlab command *reshape, contour*).

- d) Check your code for a 2D example with known analytic solution.