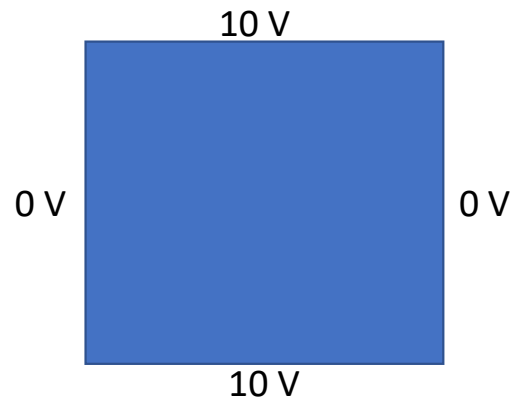


Activity 13

- 1) Provide the exact series solution to the Laplace Equation in 2D, for a 10x10 charge-free square region where the potential at the boundaries are as shown in the figure below.



- 2) Plot a contour plot of the potential determined from summing the first 200 terms of the exact solution.
- 3) Numerically Solve Poisson's equation ($\nabla^2 V(x, y) = -4\pi\rho(x, y)$) using the same boundary conditions as above, but with a non-vanishing charge density in the interior region of $\rho(x, y) = x$, and plot a contour plot of the potential.