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# ASSIGNMENT REPORT

by

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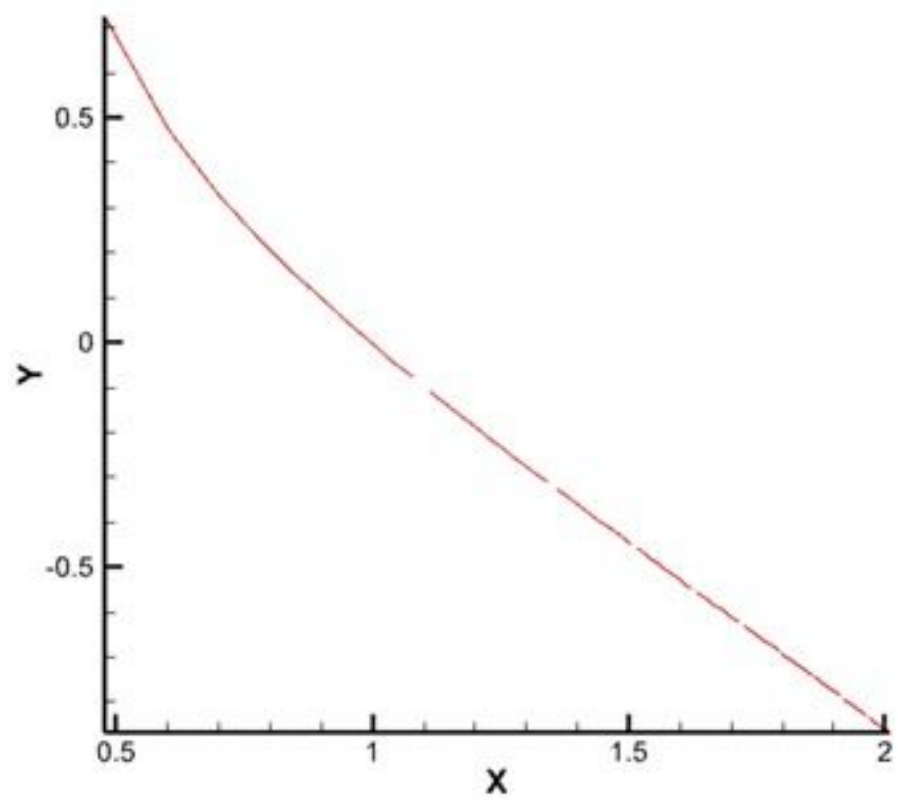
# Problem No :- 1

$$\partial^2\phi/\partial x^2 + \partial^2\phi/\partial y^2 = 0$$

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- Jacobi iterative method: -

Total no of iterations = 2465



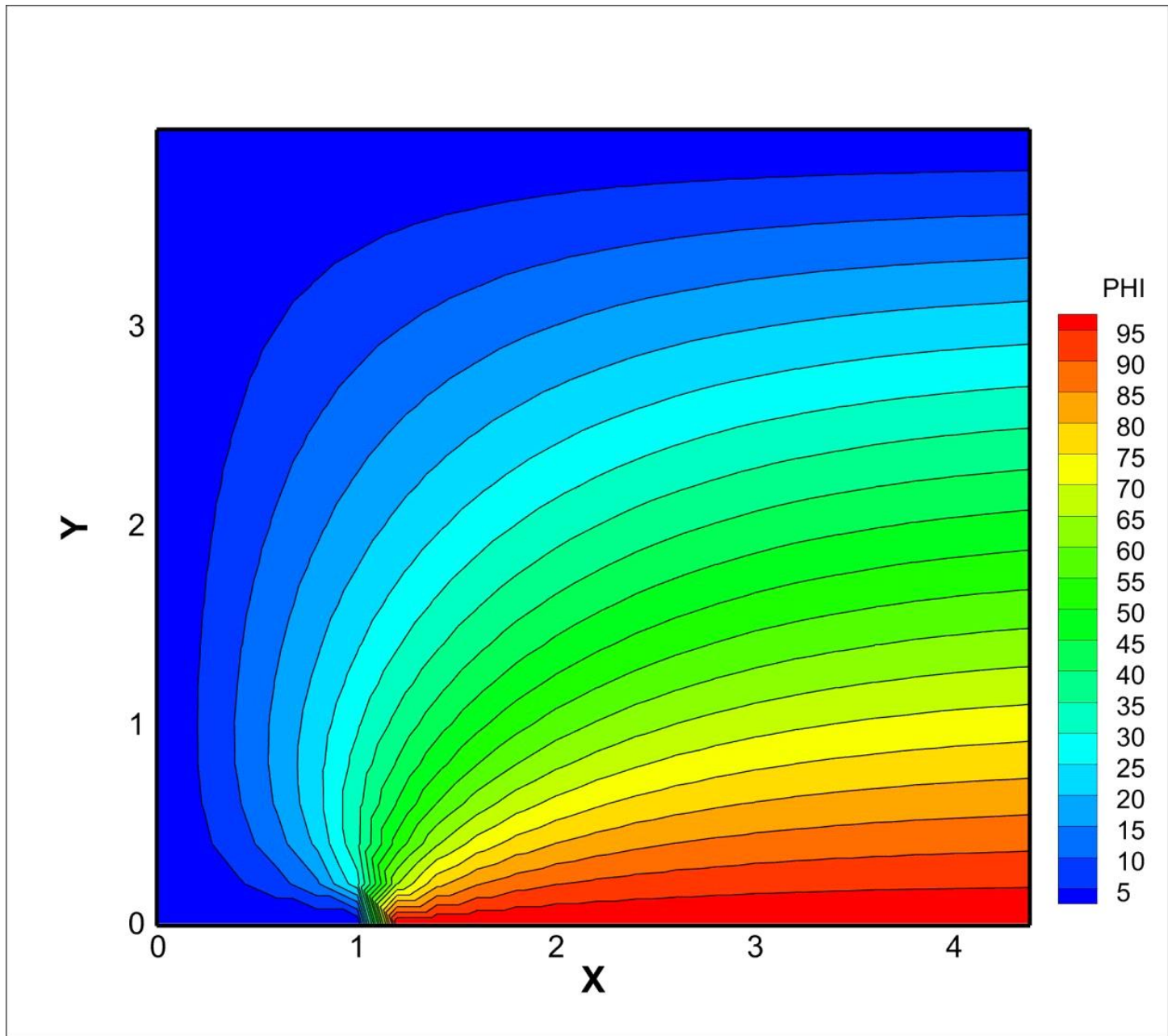
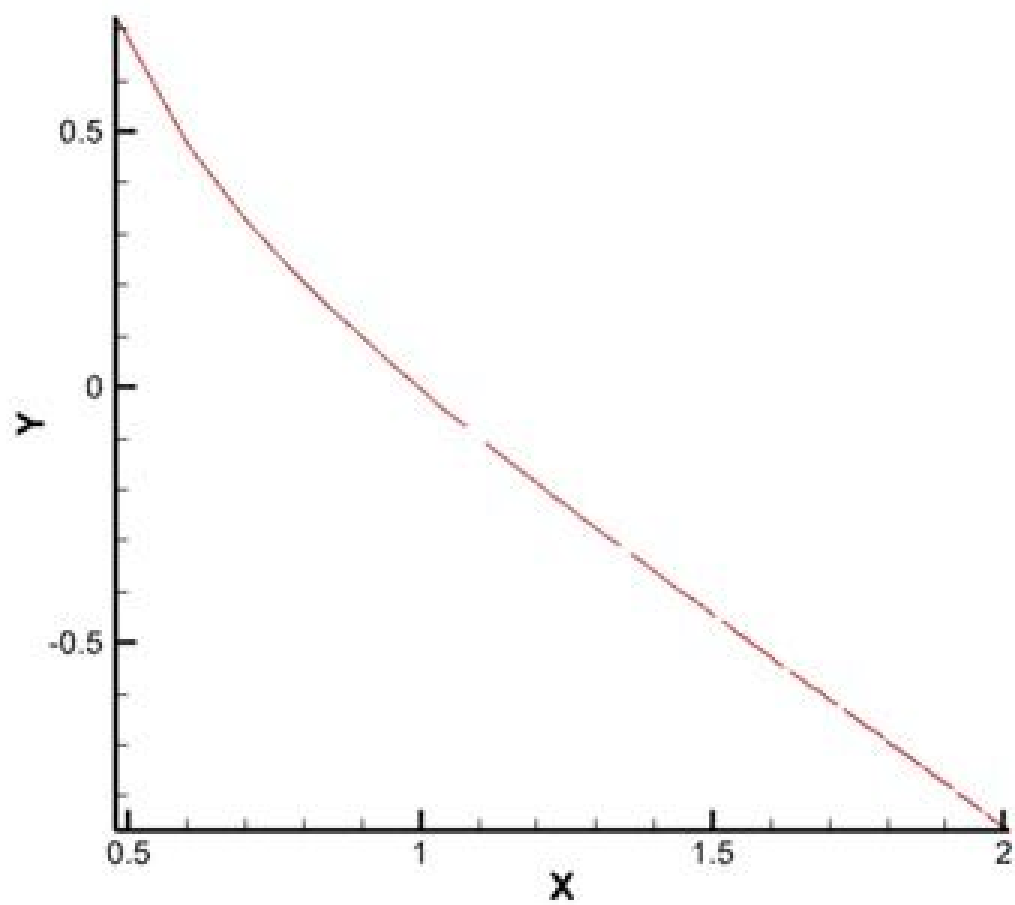


Fig1. Contour of psi value using Jacobi iteration method

- Point gauss seidel iteration method: -

Total no of iterations = 1299



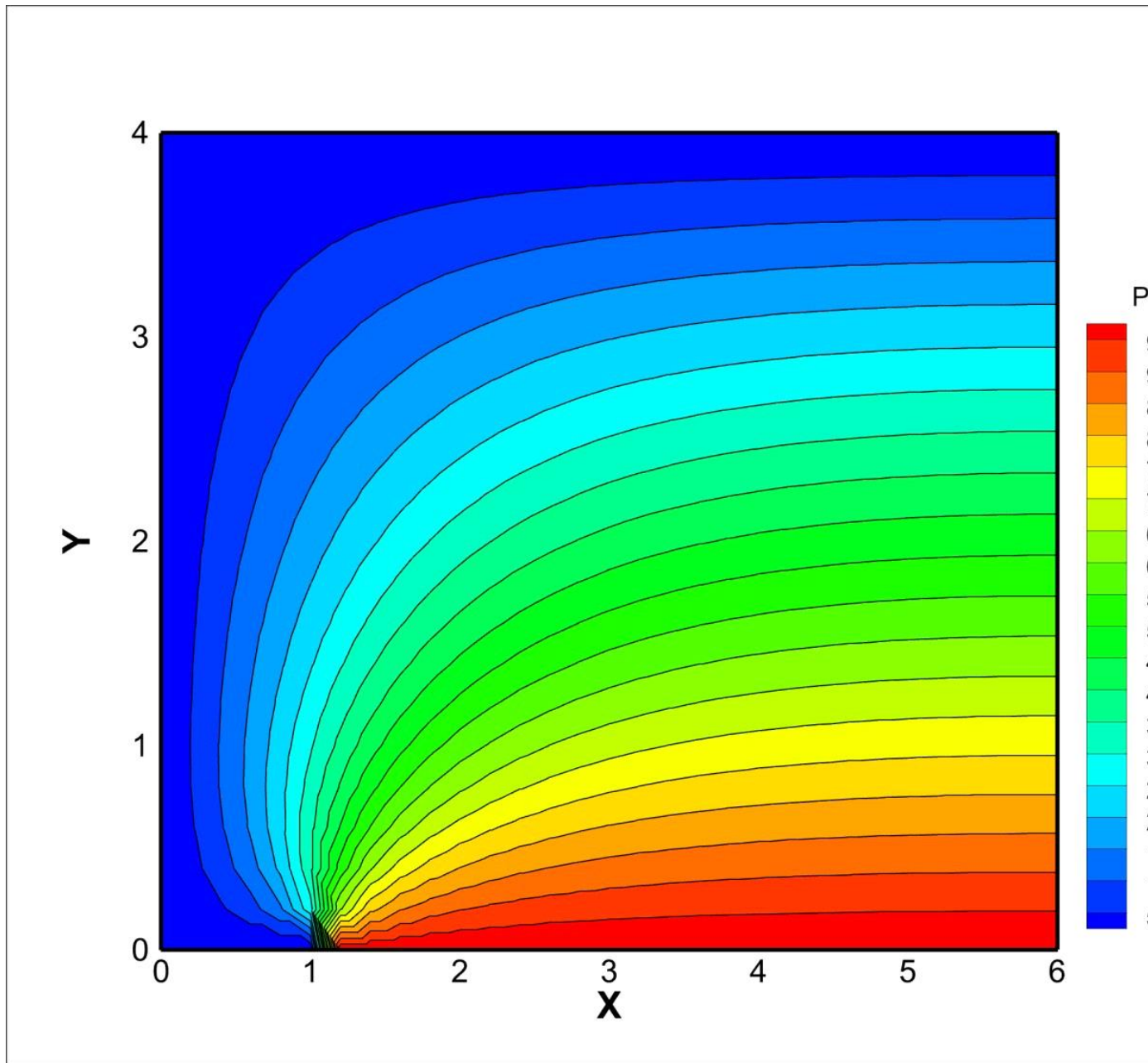
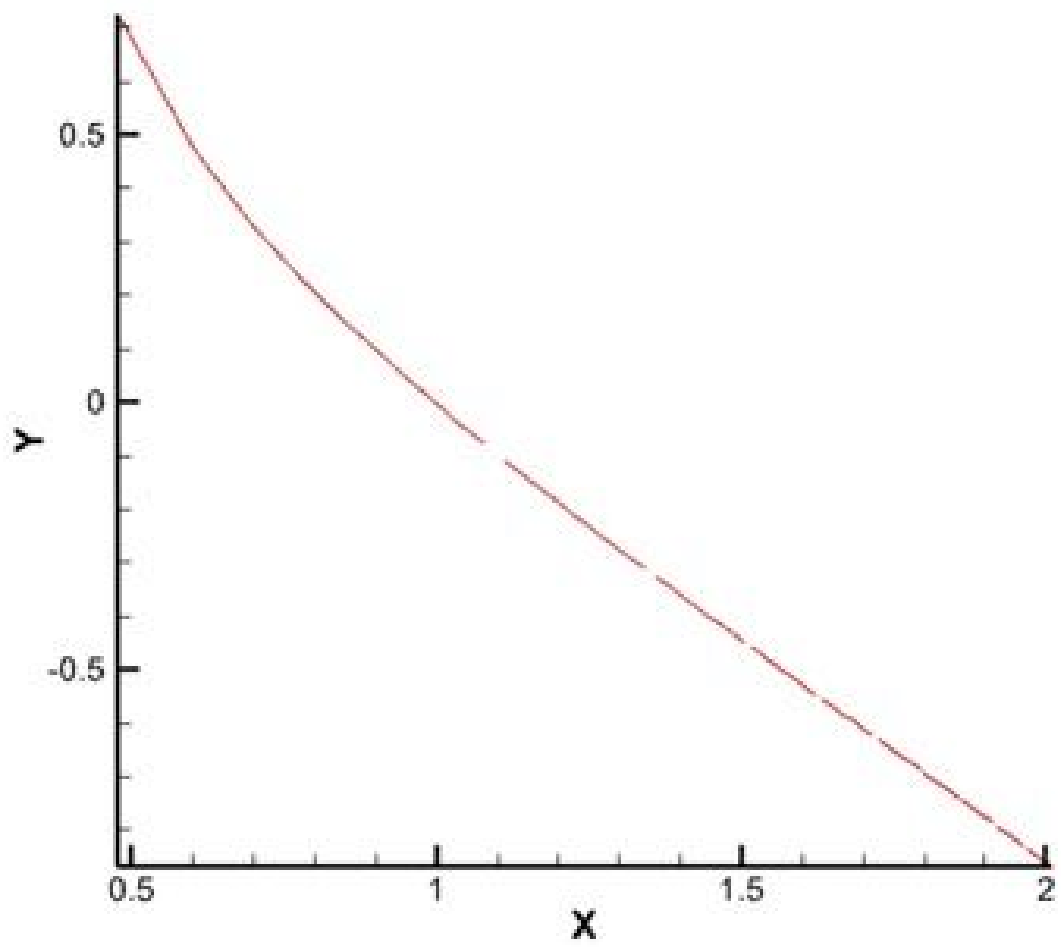


Fig 2. Contour of psi value using point gauss seidel iteration method

- Point Successive Over Relaxation (PSOR) method: -

Total no of iterations = 171



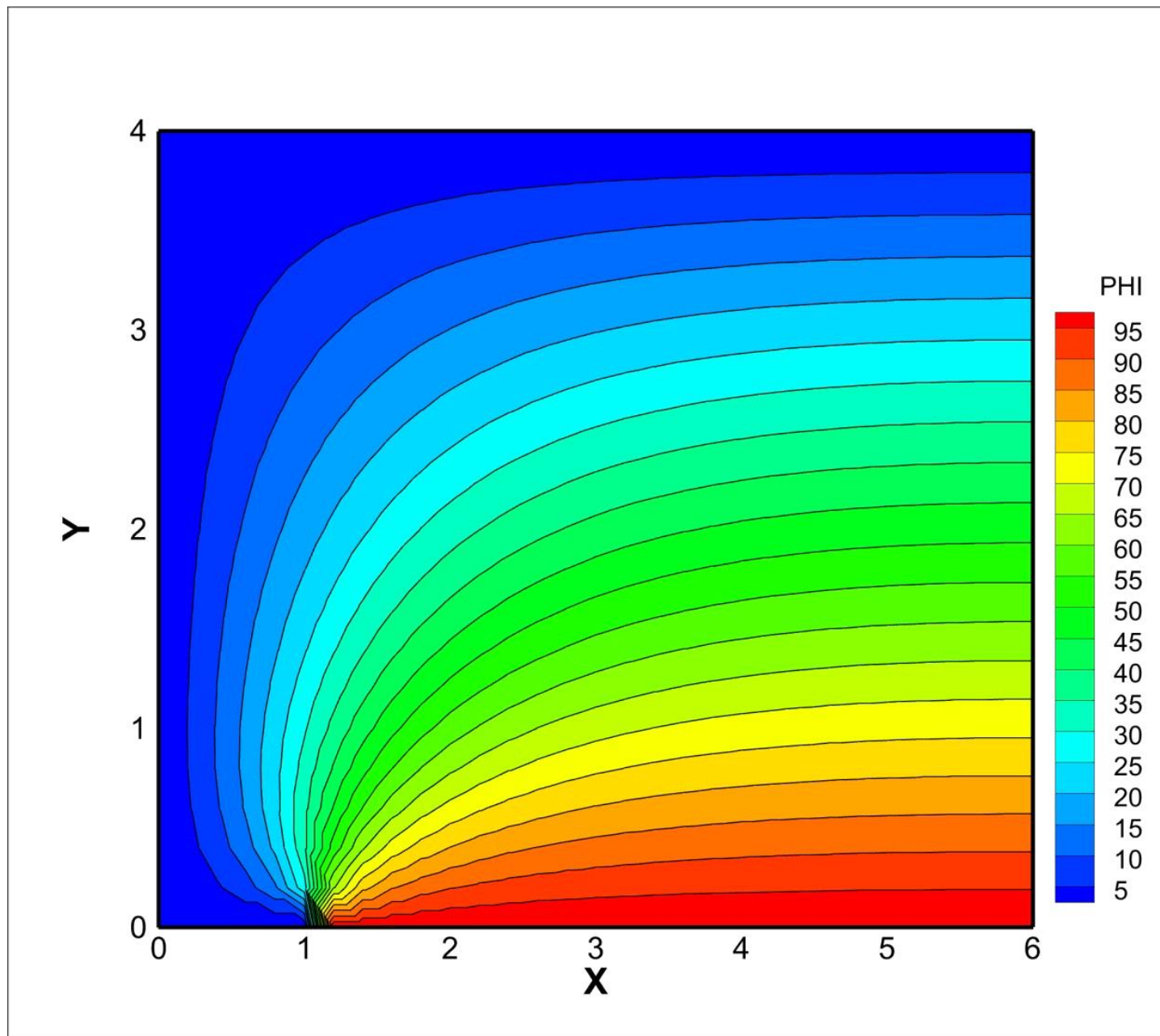
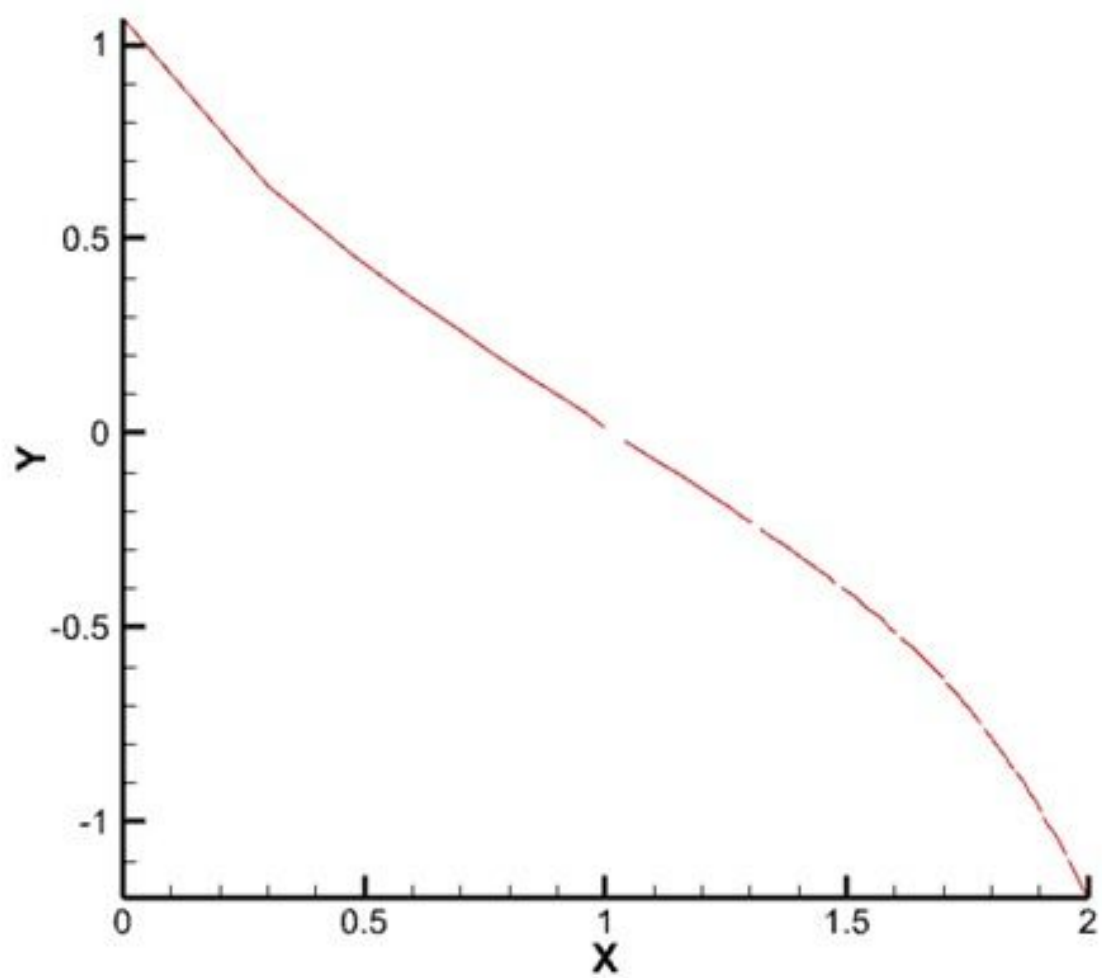


Fig 3. Contour of psi value using point successive over relaxation (PSOR) method

- Line Gauss-Seidel iterative method (TDMA): -

Total no of iterations = 532





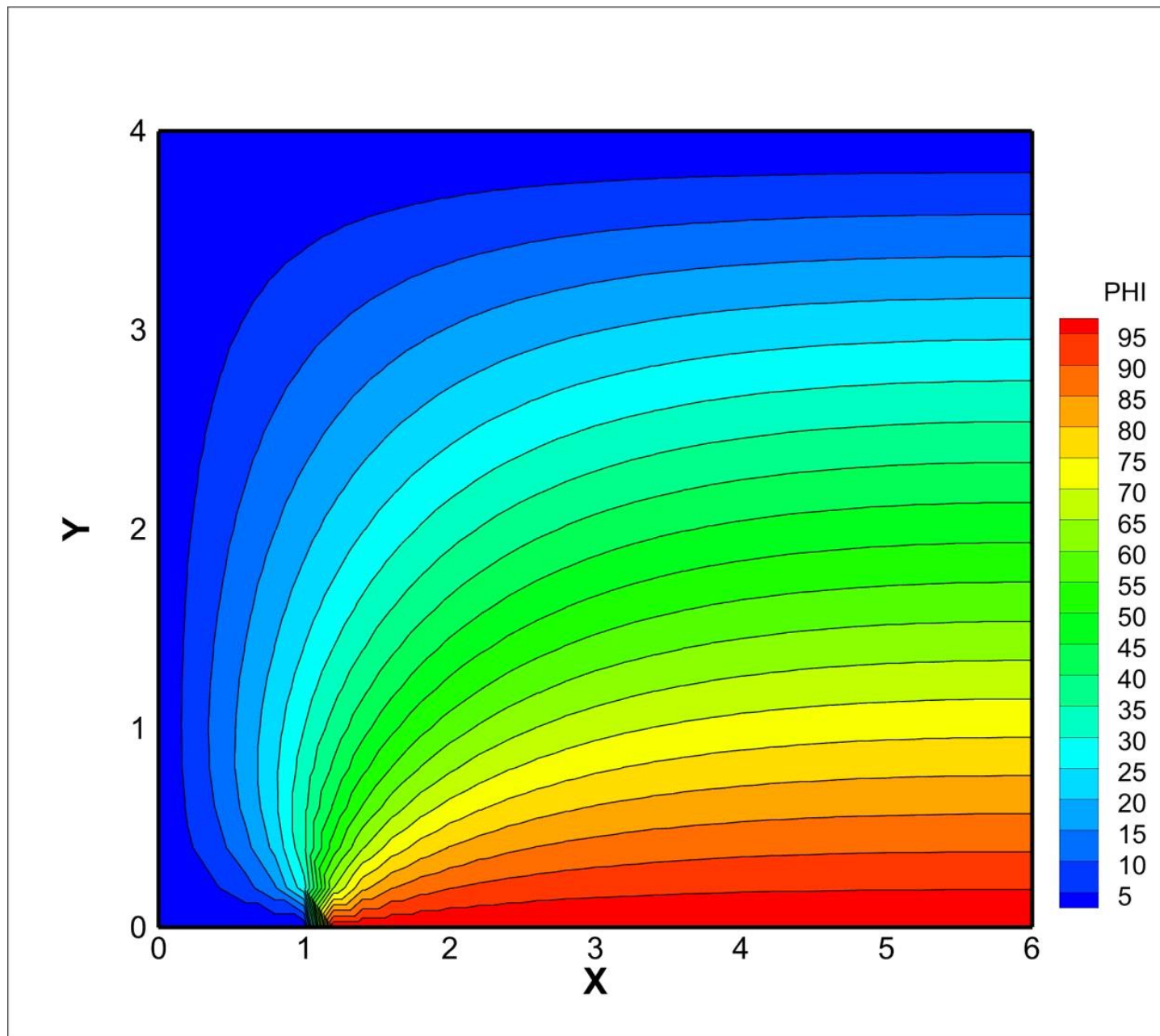
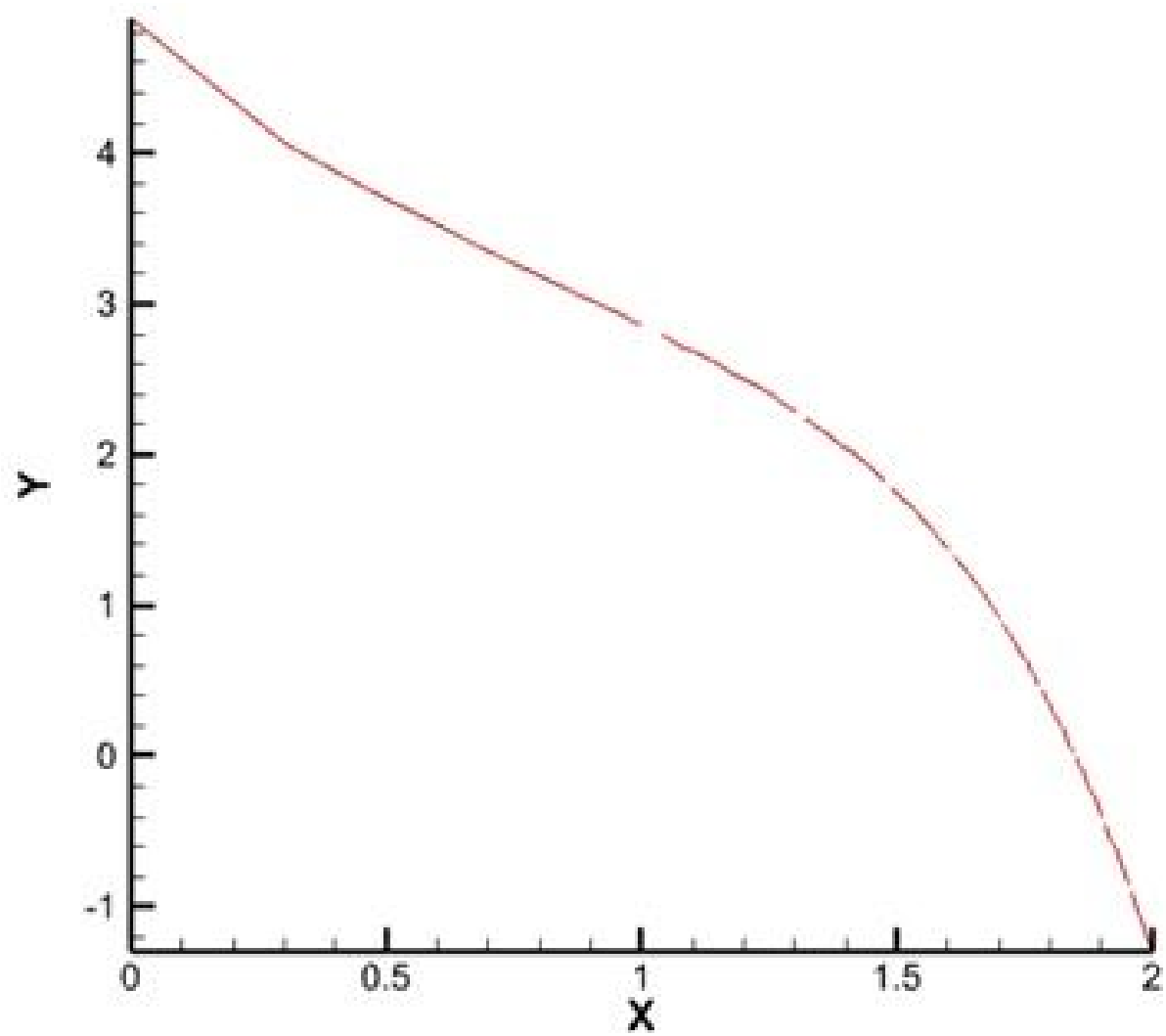


Fig 4. Contour of psi value using line gauss-seidel iterative method (TDMA)

- Alternating Direction Implicit (ADI) method: -

Total no of iterations = 385



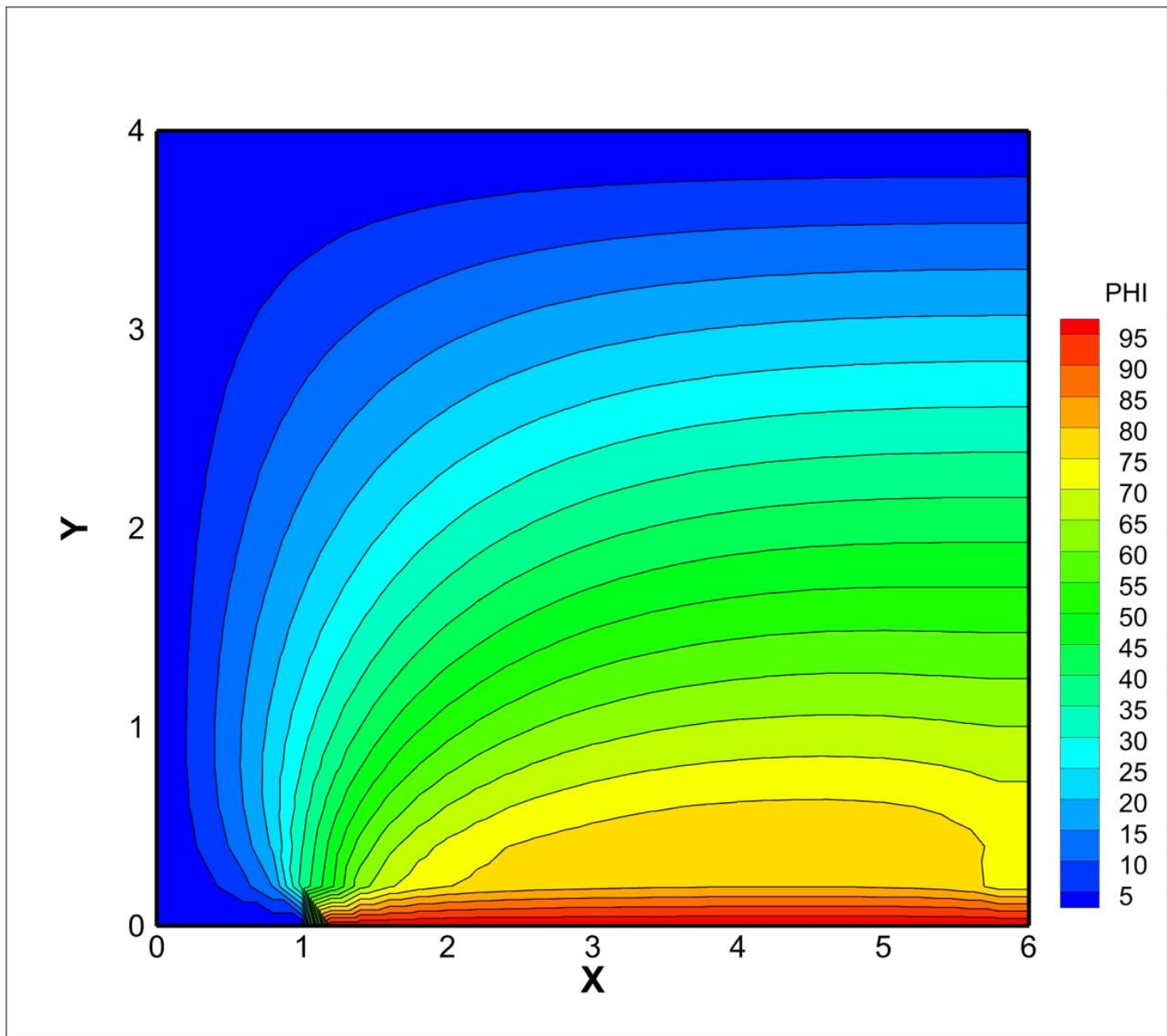


Fig 5. Contour of  $\psi$  value using Alternating Direction Implicit (ADI)

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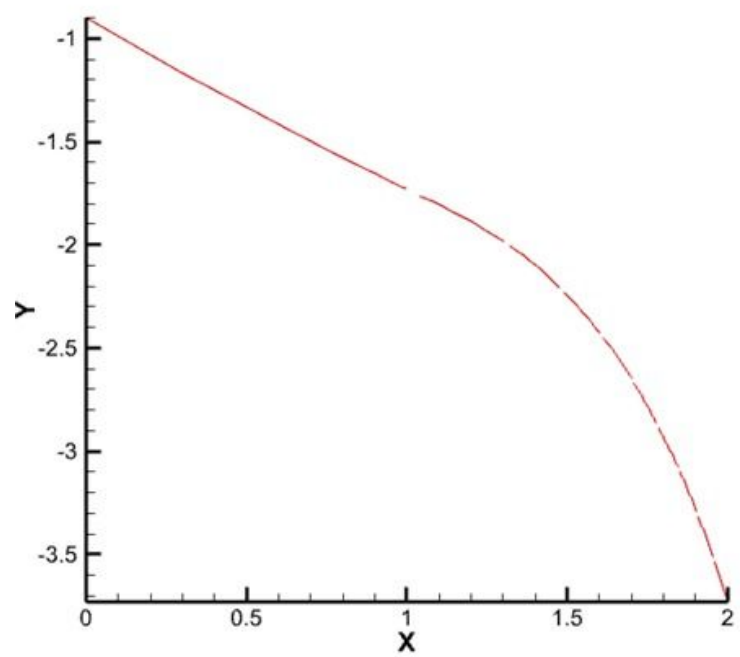
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## PROBLEM NO :- 2

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$$\partial^2 \phi / \partial x^2 + \partial^2 \phi / \partial y^2 = 0$$

- Jacobi iterative method: -  
Total no of iterations = 5365



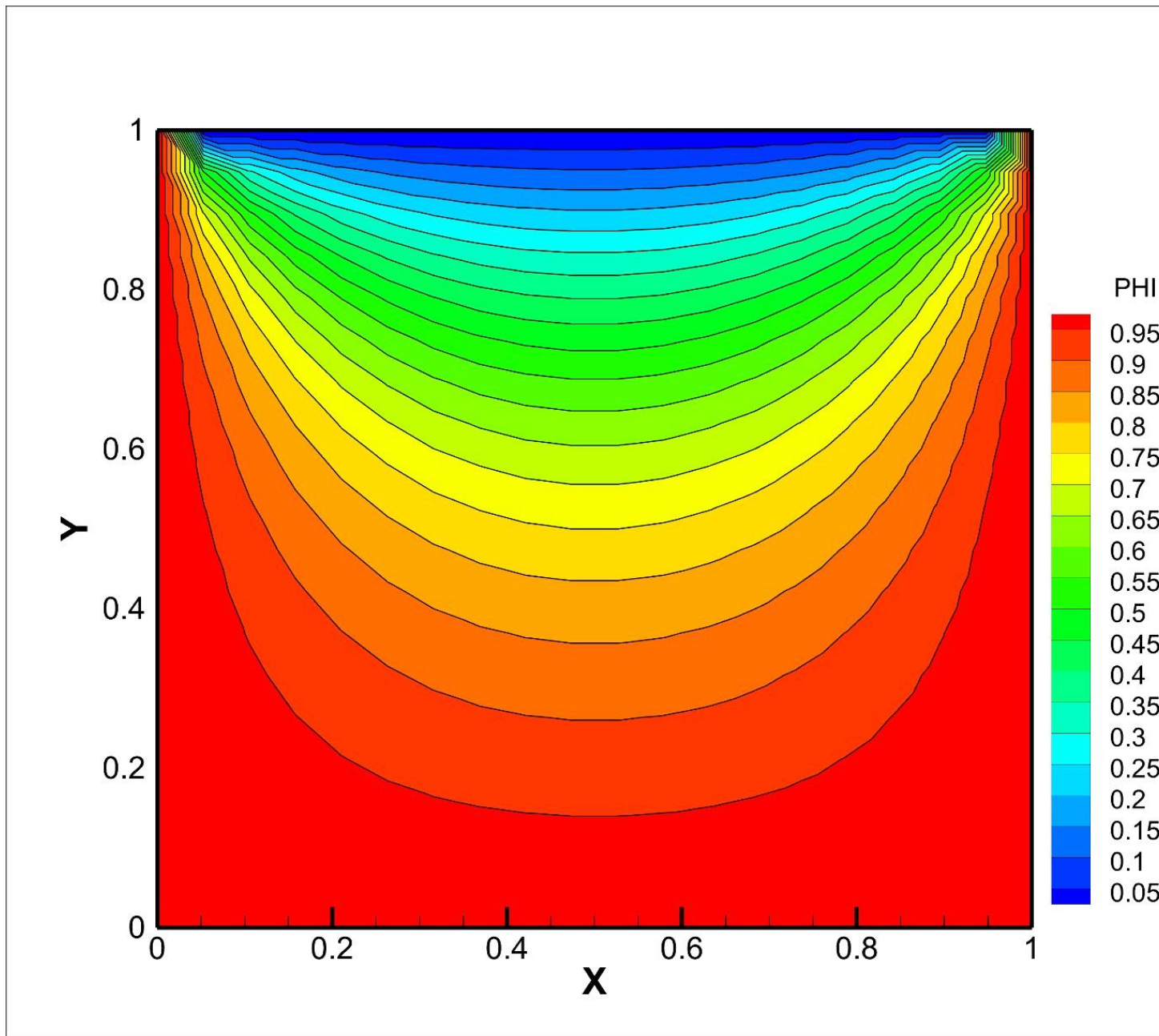
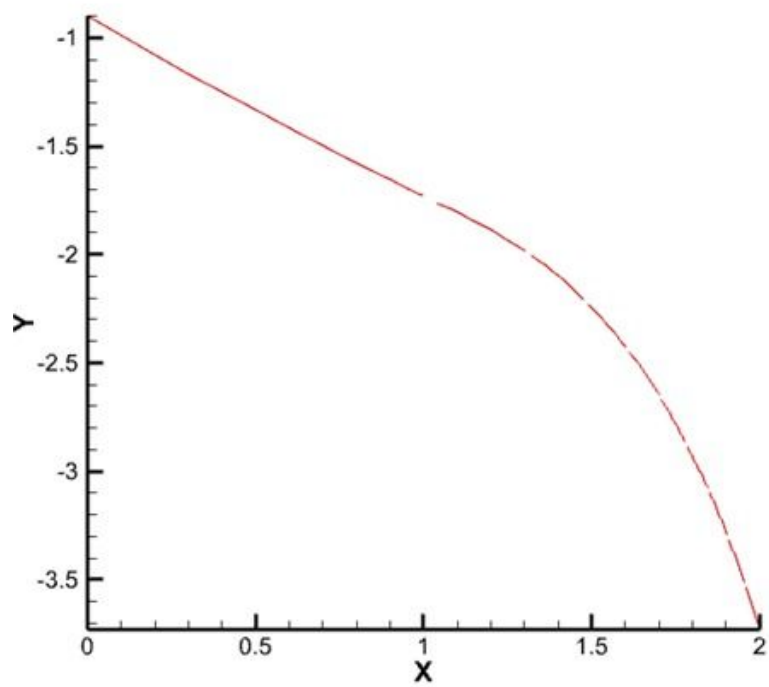


Fig 1. Contour of psi value using Jacobi iteration method

- Point gauss seidel iteration method: -

Total no of iterations = 3133





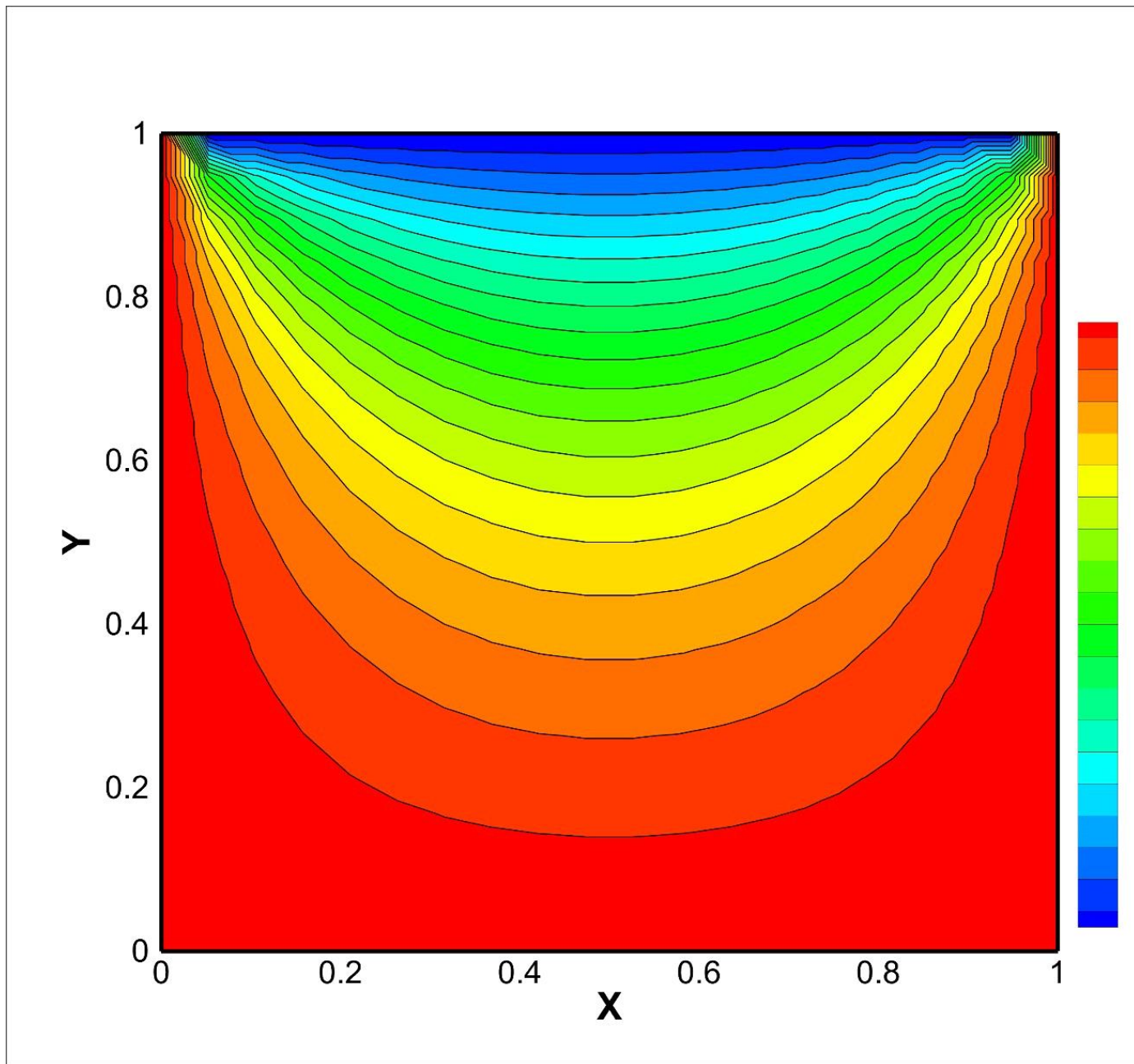
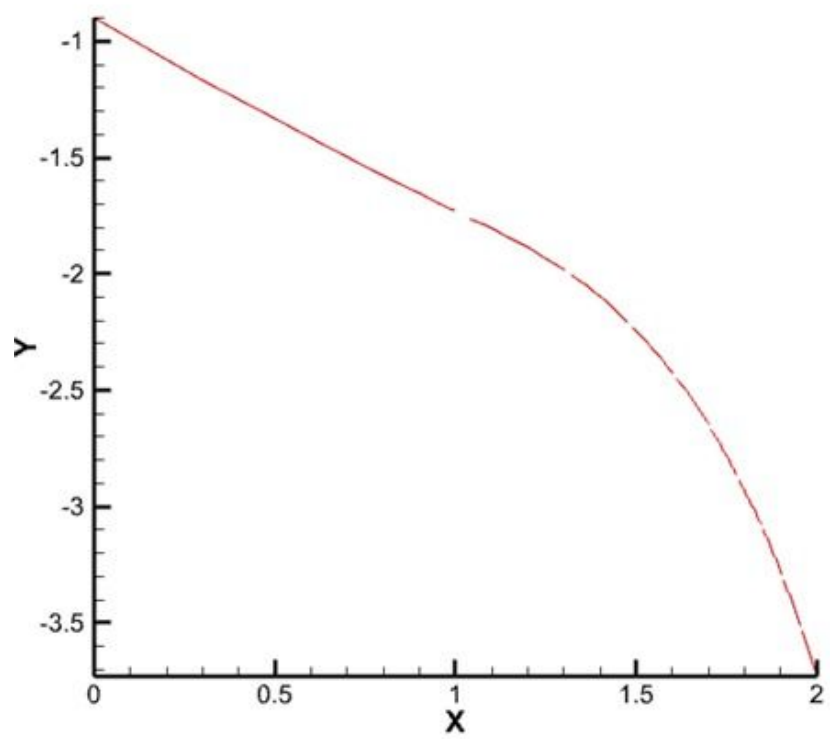


Fig 2. Contour of psi value using point gauss seidel iteration method

- Point Successive Over Relaxation (PSOR) method: -

Total no of iterations = 304



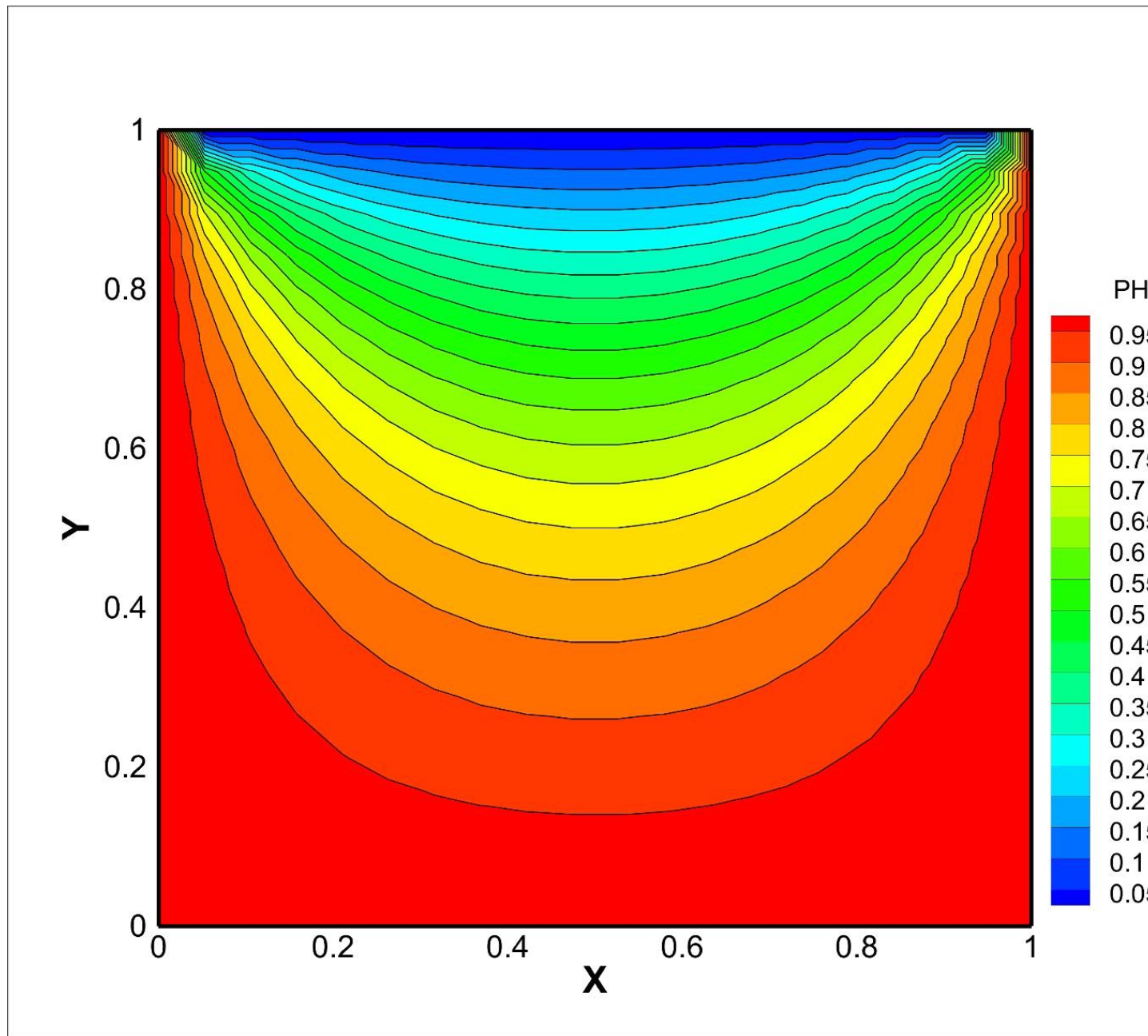
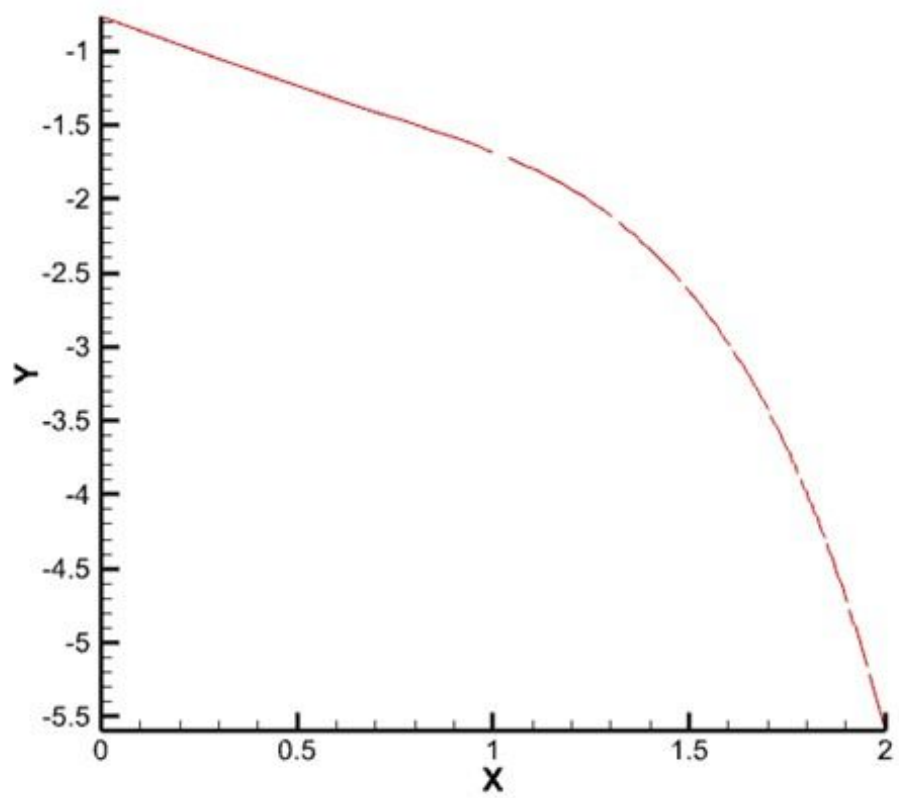


Fig 3. Contour of psi value using point successive over relax (PSOR) method

- Line Gauss-Seidel iterative method (Tridiagonal Matrix Algorithm): -

Total no of iterations = 1652



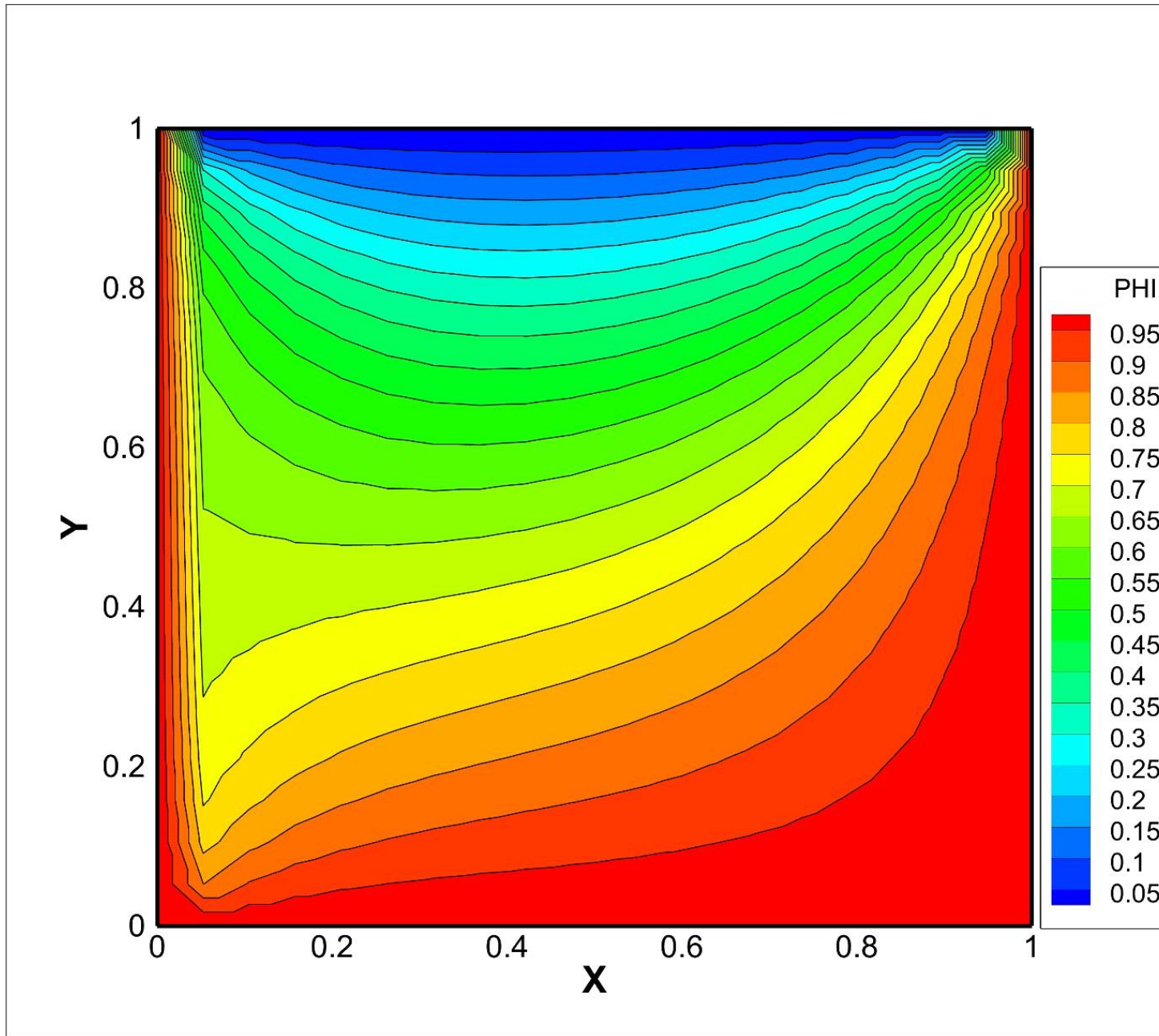
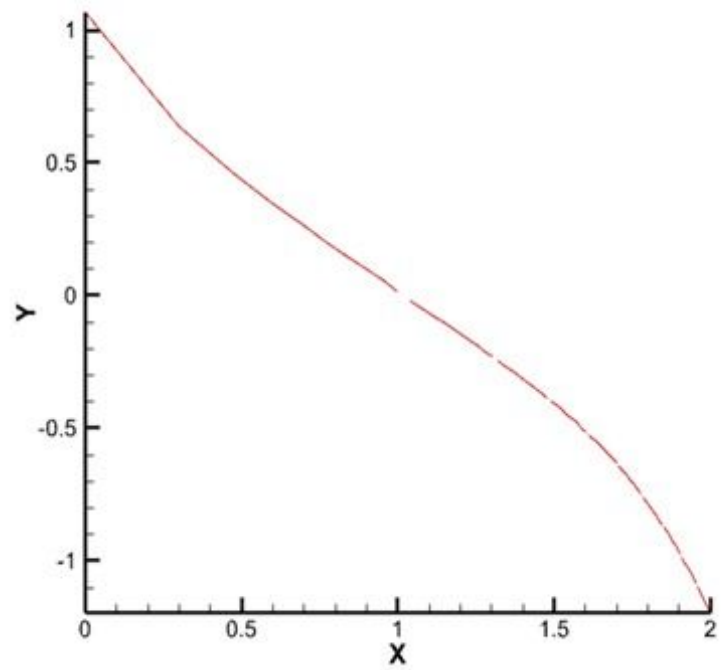


Fig 4. Contour of  $\psi$  value using line gauss-seidel iterative method (TDMA)

- Alternating Direction Implicit (ADI) method: -

Total no of iterations = 876





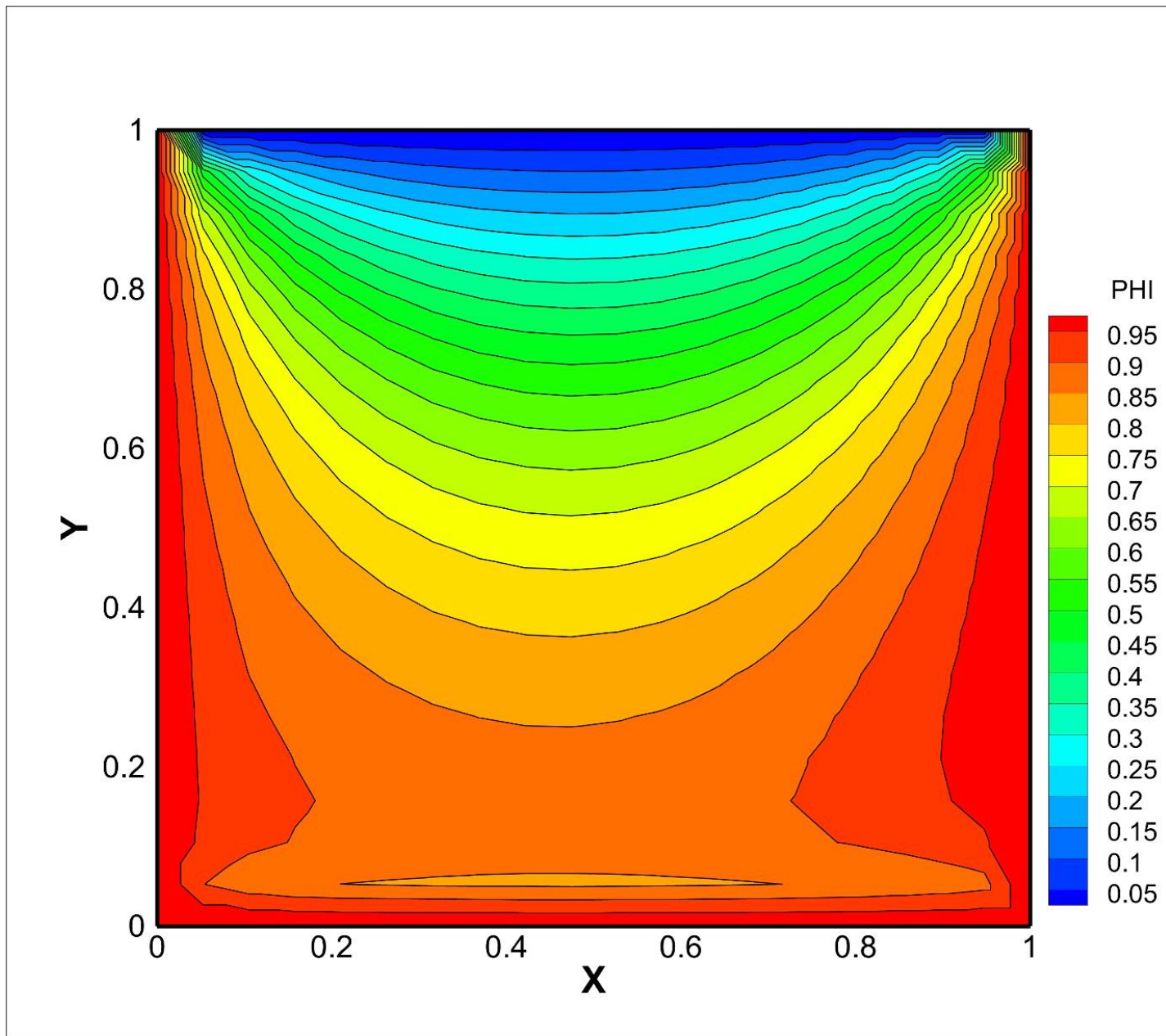


Fig 5. Contour of  $\psi$  value using Alternating Direction Implicit (ADI)

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