



Introduction to Week Six


Numerical Solutions of PDEs


Direct Solution of Boundary Value Problems


Iterative Solution of Boundary Value Problems

 **Video:** Jacobi, Gauss-Seidel and SOR Methods | Lecture 66
12 min

 **Reading:** Iterative Solution of a System of Linear Equations
10 min

 **Video:** Red-Black Ordering | Lecture 67
3 min

 **Video:** MATLAB Solution of the Laplace Equation (Iterative Method) | Lecture 68
12 min

 **Ungraded External Tool:** Iterative Solution of the Laplace Equation
30 min

Time-stepping Methods for Initial Value Problems

Quiz

Programming Assignment: Two-dimensional Diffusion Equation

Farewell

Iterative Solution of a System of Linear Equations

The Jacobi, Gauss-Seidel and SOR methods can also be used to solve a system of linear equations. Consider the system of equations given by

$$a_{11}x_1 + a_{12}x_2 + a_{13}x_3 = b_1,$$

$$a_{21}x_1 + a_{22}x_2 + a_{23}x_3 = b_2,$$

$$a_{31}x_1 + a_{32}x_2 + a_{33}x_3 = b_3.$$

By solving the i th equation for x_i , write down the Jacobi iteration method for this system.

 **Completed** [Go to next item](#)

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