# **Thomas method**

*Study*[*Thomas method*](https://www.dsedu.org/courses/dft/thomas)*to solve numerically tridiagonal matrix equation.*

*Hint: Thomas method is simplified method of Gaussian elimination. First sweep eliminates one element of matrix  coefficients, and backward sweep produces solution. That's why this method also called double-sweep method.*

The Thomas method can be used to solve effectively the tridiagonal matrix equation.

Let us consider the matrix equation

with tridiagonal matrix

We can look for a solution in the form

At first, from the boundary condition

we can calculate  and  using Eq. (2). Then we can calculate  and  recursively for (forward sweep) using the following recurrent formulas

Since we know all coefficients and   for and we know , we can calculate the solution from Eq. (2) for  (backward sweep).