

Similarity solution of two-dimensional diffusion equations by using gauss-seidel iteration with wave variables transformation

ABSTRACT

This study aims to show the performance of Gauss-Seidel (GS) method by using similarity finite difference approximation equation to solve two-dimensional (2D) parabolic partial differential equations (PDEs) compared to Jacobi method. Similarity solution method is applied to reduce parabolic PDEs into 2D explicit PDEs. A system of linear equations is generated from the discretization of 2D parabolic PDEs by using similarity finite difference scheme. Then, we present GS method for solving the system of linear equations. Besides that, the formulation and implementation of the GS method in order to solve the problem as described before are also presented. Three numerical examples are given to show the performance of GS method compared to Jacobi method.