

A note on the numerical solution of singular integral equations of Cauchy type

ABSTRACT

This manuscript presents a method for the numerical solution of the Cauchy type singular integral equations of the first kind, over a finite segment which is bounded at the end points of the finite segment. The Chebyshev polynomials of the second kind with the corresponding weight function have been used to approximate the density function. The force function is approximated by using the Chebyshev polynomials of the first kind. It is shown that the numerical solution of characteristic singular integral equation is identical with the exact solution, when the force function is a cubic function. Moreover, it also shown that this numerical method gives exact solution for other singular integral equations with degenerate kernels.

Keyword: Singular integral equations; Cauchy kernel; Chebyshev polynomials; Interpolation