Bichi, Sirajo Lawan; Eshkuvatov, Z. K.; Nik Long, N. M. A.
An automatic quadrature schemes and error estimates for semibounded weighted Hadamard type hypersingular integrals. (English) [Zbl 07022285]

Summary: The approximate solutions for the semibounded Hadamard type hypersingular integrals (HSIs) for smooth density function are investigated. The automatic quadrature schemes (AQSs) are constructed by approximating the density function using the third and fourth kinds of Chebyshev polynomials. Error estimates for the obtained quadrature solutions are obtained in the class of \( h(t) \in C^{N,\alpha}[-1, 1] \). Numerical results for the obtained quadrature schemes revealed that the proposed methods are highly accurate when the density function \( h(t) \) is any polynomial or rational functions. The results are in line with the theoretical findings.

MSC:

65D30 Numerical integration
65D32 Numerical quadrature and cubature formulas

Keywords: numerical quadrature; numerical integration; hypersingular integrals

Full Text: DOI

References:


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