

عنوان مقاله:

On approximating eigenvalues and eigenfunctions of fractional order Sturm-Liouville problems

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خلاصه مقاله:

In this paper, the eigenvalues and corresponding eigenfunctions of a fractional order Sturm-Liouville problem (FSLP) are approximated by using the fractional differential transform method (FDTM), which is a generalization of the differential transform method (DTM). FDTM reduces the proposed fourth-order FSLP to a system of algebraic equations. The resulting coefficient matrix defines a characteristic polynomial which its roots correspond to the eigenvalues of FSLP. The obtained numerical results which are compared with the results of other papers confirm the efficiency of the method.

کلمات کلیدی:

Sturm-Liouville problem, Caputo fractional derivative, eigenvalue, Eigenfunction

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