Solutions of a Class of Fractional Order Differential Equations By Using Haar Wavelet Collocation Method[1]

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Abstract: In this work, we obtain the solutions of a class of fractional differential equations (FDEs) with some boundary conditions. Haar Wavelet Collocation Method (HWCM) based on haar functions is applied for determining the solutions of a class of fractional order differential equations. With the help of this method, The equation is reduced to a system of algebraic equations. Some test examples are illustrated and the numerical results are presented both in numerically and graphically. The results show that this method is a validity and applicable method.

Keywords: Haar Wavelet Collocation Method, Fractional Order Differential Equation, Numerical Method

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References

[1] M.H.T. Alshbool, A.S. Bataineh, I. Rashim and O.R.Isik, Solution of fractional-order differential equations based on the operational matrices of new fractional Bernstein functions, vol. 29, 1-18, 2017.

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