

Applications of Double Aboodh Transform to Boundary Value Problem

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Abstract: *In this paper, we apply the method of the double Aboodh Transform for solving one-dimensional boundary value problems. Through this method, the boundary value problem is solved without converting it into an ordinary differential equation; therefore, there is no need to find the complete solution of an ordinary differential equation. This is the biggest advantage of this method. The main focus of this paper is to develop the method of the double Aboodh transform to solve initial and boundary value problems in applied mathematics.*

Keywords: Boundary Value Problem, Double Aboodh Transform, Inverse Aboodh Transform

REFERENCES

- [1]. K. S. Aboodh, R. A. Farah, I. A. Almardy and F. A. Almostafa, Solution of partial Integro-Differential Equations by using Aboodh and Double Aboodh Transform Methods, Global Journal of pure and Applied Mathematics, ISSN 0973-1768 Volume 13, Number 8 (2017), pp.4347-4360.
- [2]. A. M. Wazwaz, A reliable modification of Adomian's decomposition method, Appl. Math. And Comput., 92(1)(1998), 1-7.
- [3]. D. G. Duff, Transform Methods for solving Partial Differential Equations, Chapman and Hall/CRC, Boca Raton, F. L., (2004).
- [4]. K. S. Aboodh, R. A. Farah, I. A. Almardy and F. A. Almostafa, some Application of Aboodh Transform to First Order Constant Coefficients Complex equations, International Journal of Mathematics and its Applications, ISSN : 2347-1557, App.6(1-A)(2018),1-6.
- [5]. Adem Kilicman and Hassan Eltayeb, A note on defining singular integral as distribution and partial differential equations with convolution term, Mathematical & Computer Modelling, 49(2013), 327-336.
- [6]. A. Estrin and T. J. Higgins, The Solution of Boundary Value Problems by Multiple Laplace Transformation, Journal of the Franklin Institute, 252(2)(1951), 153-167.
- [7]. K. S. Aboodh, M. Y. Ahmed, R.A. Farah, I. A. Almardy and M. Belkhamisa, New Transform Iterative Method for Solving some Klein-Gordon Equations,(IJAR SCT) IIUI, ISSN 1 Volume 2, (2022), pp.118-126. SCOPe Database Article Link: <https://sdbindex.com/documents/00000310/00001-85016.pdf>
- [8]. K. S. Aboodh, I. A. Almardy, R. A. Farah, M. Y. Ahmed and R. I. Nuruddeen, On the Application of Aboodh Transform to System of Partial Differential Equations, BEST, IJHAMS Journal, ISSN(P): 2348-0521; ISSN(E): 2454-4728 Volume 10, Issue 2, Dec 2022.