Advances in Mathematical Sciences and Applications
Vol. 33, No. 1 (2024), pp. 201–215

GAKKOTOSHO
TOKYO JAPAN

A NEW GENERAL INTEGRAL TRANSFORM AND APPLICATION TO SOLVING FRACTIONAL DIFFERENTIAL AND INTEGRAL EQUATIONS

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Abstract. Solving differential equations of fractional (i.e., non-integer) order is significantly more challenging than in the standard integer-order case, especially in terms of achieving accurate, reliable, and efficient results. Most computational tools do not provide built-in functions to tackle these complex problems. In this paper, we introduced a general integral transform in the class of Laplace transform and applied this new method to solve fractional-order integral equations. Also, our study undertakes a comprehensive comparison between a few selected existing integral transforms such as Laplace, Sumudu, Elzaki, and Pourreza transforms.

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Communicated by Editors; Received January 30, 2024
AMS Subject Classification: 26A33, 34K37, 42A38, 42B10.
Keywords: Laplace transform, fractional order integral equations, integral equation, ordinary differential equations.