

On hybrid type nonlinear fractional integrodifferential equations

ABSTRACT

In this paper, we introduce and investigate a hybrid type of nonlinear Riemann Liouville fractional integro-differential equations. We develop and extend previous work on such non-fractional equations, using operator theoretical techniques, and find the approximate solutions. We prove the existence as well as the uniqueness of the corresponding approximate solutions by using hybrid fixed point theorems and provide upper and lower bounds to these solutions. Furthermore, some examples are provided, in which the general claims in the main theorems are demonstrated.

Keyword: Fractional integro-differential equation; Hybrid type fractional integro-differential equation; Fixed point theorems; Dhage theorem; Approximations solutions; Lipschitz conditions; Weaker mixed partial continuity