Approximate and Generalized Solutions of Conformable Type Coudrey-Dodd-Gibbon-Sawada-Kotera Equation

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Abstract

In this study, we consider conformable type Coudrey-Dodd-Gibbon-Sawada-Kotera (CDGSK) equation. Three powerful analytical methods are employed to obtain generalized solutions of the nonlinear equation of interest. First, the sub-equation method is used as baseline where generalized closed form solutions are obtained and are exact for any fractional order alpha. Furthermore, Residual power series (RPSM) and q-homotopy (q-HAM) analysis techniques are then applied to obtain approximate solutions. These are possible using some properties of conformable derivative. These approximate methods are very powerful and efficient due to the absence of the need for linearization, discretization and perturbation. Numerical simulations are carried out showing error values, h-curve for q-HAM and the effects of fractional order on the solution profiles.

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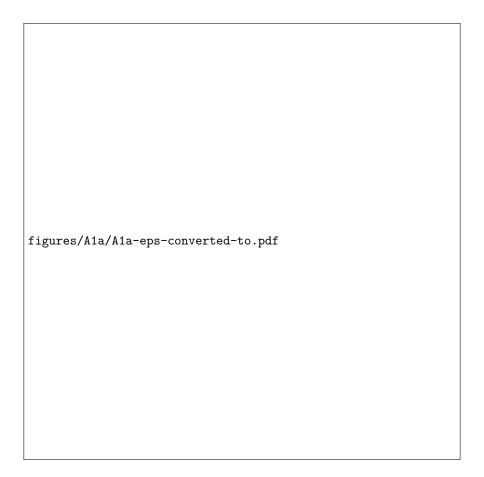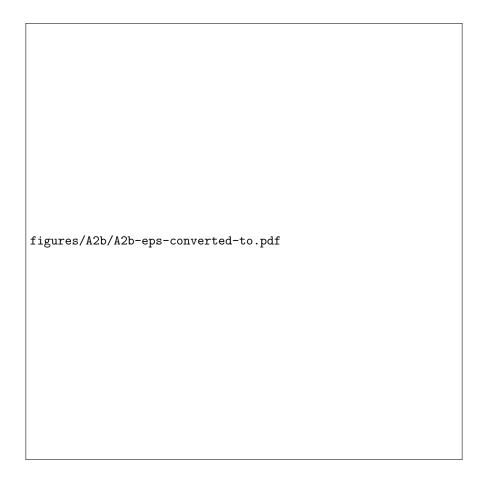
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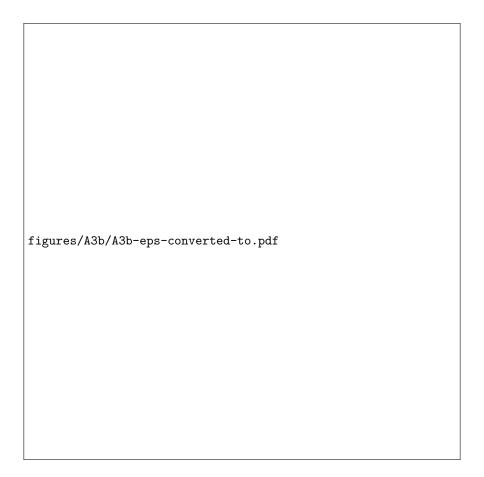
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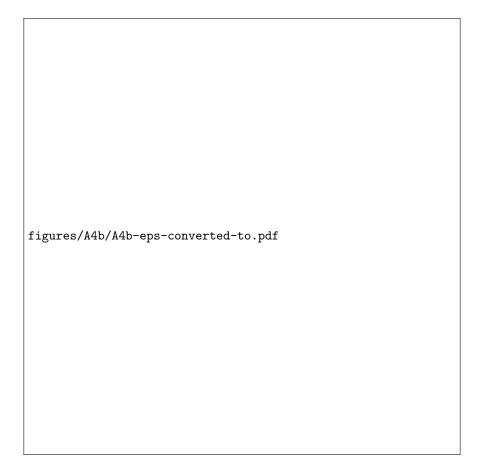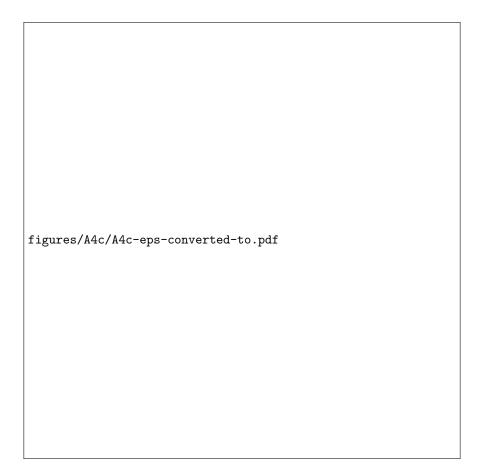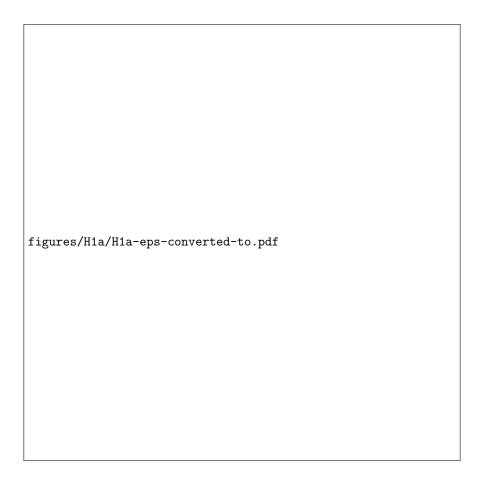
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