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Comments on “Soliton solutions to fractional-order nonlinear differential equations based on the exp-function method”

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Abstract

In their recently published article, Guner and Atik apply the exp-function method to derive solitary solutions to fractional-order nonlinear differential equations. We argue that the solutions provided by Guner and Atik do not satisfy the considered equations. Furthermore, we derive correct solitary solutions as well as necessary and sufficient conditions for the existence of these solutions in the space of equation parameters and initial conditions.

Keywords: Solitary solutions, fractional-order derivative, nonlinear differential equations, the exp-function method

2000 MSC: 35G20, 35C07, 35C05

1. Introduction

In their recent article [1] Guner and Atik use the exp-function method to derive exact solitary solutions to the time fractional modified nonlinear Kawahara equation and the nonlinear fractional advection-diffusion-reaction equation. One of the objectives of this article is to demonstrate that the solutions obtained in [1] do not satisfy the considered differential equations. Furthermore, we derive the correct solitary solutions as well as conditions of existence of these solutions in the space of equation parameters and initial conditions.

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