

Similarity reduction, consistent Riccati expansion solvability and novel solutions for a generalized variable-coefficient modified KdV equation with external-force term

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Abstract

In this study, the generalized modified variable-coefficient KdV equation with external-force term (gvcmKdV) arising in fluid mechanics, plasma physics and ocean dynamics is studied for integrability by using consistent Riccati expansion (CRE) solvability and reduced to nonlinear integrable ordinary differential equation by Clarkson and Kruskal (CK) similarity reduction method. By using the solutions of Riccati equations given before in literature many novel solitary and periodic wave solutions obtained for the gvcmKdV.

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