

# Periodic Wave Solutions of a Generalized KdV-mKdV Equation with Higher-Order Nonlinear Terms

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The Jacobin doubly periodic wave solution, the Weierstrass elliptic function solution, the bell-type solitary wave solution, the kink-type solitary wave solution, the algebraic solitary wave solution, and the triangular solution of a generalized Korteweg-de Vries-modified Korteweg-de Vries equation (GKdV-mKdV) with higher-order nonlinear terms are obtained by a generalized subsidiary ordinary differential equation method (Gsub-ODE method for short). The key ideas of the Gsub-ODE method are that the periodic wave solutions of a complicated nonlinear wave equation can be constructed by means of the solutions of some simple and solvable ODE which are called Gsub-ODE with higher-order nonlinear terms.

*Key words:* GKdV-mKdV Equation; Homogeneous Balance Method; New Auxiliary Equation Method; ODE with Higher-Degree Nonlinear Terms; Periodic Wave Solutions; Solitary Wave Solutions.

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