

## Symbolic Computation for the Multi-Soliton Solutions of a Class of Fifth-Order Evolution Equations

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**Abstract :** By employing a simplified bilinear method, a class of generalized fifth-order KdV (gfKdV) equations which arise in nonlinear lattice, plasma physics and ocean dynamics are investigated. With the aid of symbolic computation, both solitary wave solutions and multiple-soliton solutions are obtained. These new exact solutions will extend previous results and help us explain the properties of nonlinear solitary waves in many physical models in shallow water. Parametric analysis is carried out in order to illustrate that the soliton amplitude, width and velocity are affected by the coefficient parameters in the equation.

**Keywords :** multiple soliton solutions, fifth-order evolution equations, Cole-Hopf transformation, Hirota bilinear method

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