Exact Periodic Solitary Wave and Double Periodic Wave Solutions for the (2+1)-Dimensional Korteweg-de Vries Equation*

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A new technique, the extended ansatz function method, is proposed to seek periodic solitary wave solutions of integrable systems. Exact periodic solitary wave solutions for the (2+1)-dimensional Korteweg-de Vries (KdV) equation are obtained by using this technique. By using the trial function method, Jacobi elliptic function double periodic solutions are also constructed for this equation. This result shows that there exist periodic solitary waves in the different directions for the (2+1)-dimensional KdV equation.