

Some Methods for Generating Explicit Solutions to the KdV and Generalized KdV Equations

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The Korteweg–de Vries equation is reviewed and some methods are introduced which can produce solutions with particular properties. The method of symmetry reduction is applied to the generalized Korteweg–de Vries equation and several classes of invariant solutions are obtained. Polynomial, trigonometric and elliptic function solutions can be calculated. It is shown that this generalized equation can be reduced to a first order equation under a particular second order differential constraint which resembles a Schrodinger equation. A condition which ensures that the reciprocal of a solution is also a solution is given as well.