

A numerical method for the solutions of two dimensional quasilinear hyperbolic equations

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In this article, we have proposed a numerical technique based on polynomial differential quadrature method (PDQM) to find the numerical solutions of two-space-dimensional quasilinear hyperbolic partial differential equations subject to appropriate Dirichlet and Neumann boundary conditions. The second-order hyperbolic partial differential equations have great importance in fluid dynamics and aerodynamics, theory of elasticity, optics, electromagnetic etc. The PDQM reduced the equations into a system of second order linear differential equation. The obtained system is solved by RK4 method by converting into a system of first ordinary differential equations. The accuracy of the proposed method is demonstrated by several test examples. The numerical results are found to be in good agreement with the exact solutions. The proposed technique can be applied easily for multidimensional problems.