Special functions for solving nonlinear differential equations

Ji-huan He[1]

[1]Soochow University

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Abstract

This paper shows the special functions are a mathematical tool to solving nonlinear equations. The gamma function is used as an example to show the one-step solution process for a special nonlinear oscillator. Comparison with the exact solution and the approximate solution obtained by the homotopy perturbation method reveals the gamma function method is extremely simple and remarkably accurate.

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