Joohy, Ali K.; Al-Juaifri, Ghassan A.; Mechee, Mohammed S.
An investigation of solving third-order nonlinear ordinary differential equation in complex domain by generalising Prelle-Singer method. (English) Zbl 1472.34152
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Summary: A method to solve a family of third-order nonlinear ordinary complex differential equations (NLOCDEs) – nonlinear ODEs in the complex plane – by generalizing Prelle-Singer has been developed. The approach that the authors generalized is a procedure of obtaining a solution to a kind of second-order nonlinear ODEs in the real line. Some theoretical work has been illustrated and applied to several examples. Also, an extended technique of generating second and third motion integrals in the complex domain has been introduced, which is conceptually an analog to the motion in the real line. Moreover, the procedures of the method mentioned above have been verified.

MSC:
34M04 Nonlinear ordinary differential equations and systems in the complex domain

Software:
Maple

Full Text: DOI

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