

Title

Solutions to higher order ODEs by using integrating factor techniques

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Abstract

Ordinary differential equations have a variety of methods that can be used to solve them. These methods include variation of parameters, Euler method, first order integrating factor, and many more. It is apparent that first order integrating factor can only be used for first order differential equations while other methods are able to solve higher order differential equations. This presentation will show us how we can apply integrating factor methods to high order equations, such as second order equations, third order equations, n -th order equations and nonlinear equations. We can also derive a method to construct higher order differential equations using integrating factors, and we are able to find their solutions through this construction. Through various examples, we can show applications to these methods, as well as provide some real-world examples. We will conclude this presentation by discussing the limitations to these methods, as well as future research on these methods.