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That means that the differential equation is a first order. Let's confirm these notions through the examples. On the other hand, we call any ordinary differential equation, which is not linear, we call it to be nonlinear ordinary differential equation, okay? For example, $y'' - 2xy' + 2y = 0$.

Nonlinear Ordinary Differential Equations

Sturm–Liouville theory is a theory of a special type of second order linear ordinary differential equation. Their solutions are based on eigenvalues and corresponding eigenfunctions of linear operators defined via second-order homogeneous linear equations. The problems are identified as Sturm–Liouville Problems (SLP) and are named after J.C.F. Sturm and J. Liouville, who studied them in the ...

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Nonlinear Ordinary Differential Equations: Problems and ...

The scope of this article is to explain what is linear differential equation, what is nonlinear differential equation, and what is the difference between linear and nonlinear differential equations. Since the development of calculus in the 18th century by the mathematicians like Newton and Leibnitz, differential equation has played an important role in the story of mathematics.

Difference Between Linear and Nonlinear Differential Equations

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