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Equations that contain nonlinear terms are known as non-linear

differential equations. All above are nonlinear differential equations. Nonlinear differential equations are difficult to solve, therefore, close study is required to obtain a correct solution. In case of partial differential equations, most of the equations have no general solution.

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When physical phenomena are modeled with non-linear equations, they are generally approximated by linear differential equations for an easier solution. The few non-linear ODEs that can be solved explicitly are generally solved by transforming the equation into an equivalent linear ODE (see, for example Riccati equation).

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