

Abstract

One of the main purposes of this thesis is to complete the classification of fourth order ordinary differential equations according to the symmetry algebras they admit. This is achieved in chapter three after the preliminary chapters on the introduction and the symmetry method.

The second objective is to obtain linearization of a fourth order ordinary differential equations via point transformations by using the structure of their Lie symmetry algebras.

This is contained in chapter four.

In chapter five, the integration of fourth order ordinary differential equations is carried out when they admit four dimensional symmetry algebras.

Lastly, in chapter six, a general classification of n th order ordinary differential equations according to their symmetry algebras is completed.

