

## Abstract

A functional analytic method is used, so as to prove that certain non-linear ordinary differential equations have a unique solution, which together with some of its derivatives converges absolutely in a specified disc of the complex plane. Moreover, bounds of the solution and some of its derivatives are given, together with a region, depending on the initial conditions and the parameters of the equation, where such a solution holds. The method is applied to a general non-linear differential equation, which includes the Falkner-Skan and Blasius equations, to the Chazy equation, to the reduced Fisher equation and to the FitzHugh-Nagumo system.