

ABSTRACT

The present study has tackled the stability of the solutions of differential equations in the Lyapunov's concept. All this as preamble to uncover the stability of some dynamical systems given by differential equations using Lyapunov functions, to recognize the importance of the nonlinear systems in physics, engineering, mechanics, weather reading, and many natural phenomena.

In the case of ordinary differential equations, main theorems and definitions of Lyapunov's methods have been treated. In the case of fractional differential equations, the fundamentals of fractional calculus and the stability analysis have been described.