

ANALYSIS OF DYNAMICAL SYSTEMS

Variant 21

Part 1: Nameless system #4

Analyse 2-D system.

$$\begin{cases} \dot{x} = -x - y + x(x^2 + 2y^2), \\ \dot{y} = x - y + y(x^2 + 2y^2). \end{cases}$$

Part 2: Sprott L, chaotic flow

Determine whether the following 3-D system represents a strange attractor or not.

$$\begin{cases} \dot{x} = y + 3.9z, \\ \dot{y} = 0.9x^2 - y, \\ \dot{z} = 1 - x. \end{cases}$$