

ANALYSIS OF DYNAMICAL SYSTEMS

Variant 17

Part 1: Nameless system #1

Analyse 2-D system

$$\begin{cases} \dot{x} = (x + 2)\sqrt{2x^2 + 1} - \arctan(y - 2), \\ \dot{y} = \sin(x + 2) + e^{3y-6} - 1, \end{cases}$$

where the fixed point is $(x^*, y^*) = (-2, 2)$.

Part 2: Sprott Q, chaotic flow

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

$$\begin{cases} \dot{x} = -z, \\ \dot{y} = x - y, \\ \dot{z} = 3.1x + y^2 + 0.5z. \end{cases}$$