Analysis of Dynamical Systems

Variant 20

Part 1: Liénard equation

Analyse 2-D system.

$$\ddot{x} - \left(\mu - x^2\right)\dot{x} + x = 0,$$

where μ is a constant.

Parameter	Version **20.1**	Version **20.2**
μ	-0.33	1.0

Part 2: Chen attractor

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

$$\begin{cases} \dot{x} = a(y - x), \\ \dot{y} = (c - a)x - xz + cy, \\ \dot{z} = xy - bz, \end{cases}$$

where the constants have values $a = 35$, $b = 3$, $c = 28$.