

1. Find the (prime) period-2 points of the following 1-d maps:

$$\begin{aligned}x' &= 1 - x^2, & x' &= 2x \\x' &= rx(1 - x), & x' &= 10xe^{-x}\end{aligned}$$

Determine their stability properties.

2. Find the period-3 points of the following map:

$$x' = \begin{cases} 2x, & \text{if } 0 < x \leq 1/2 \\ 2 - 2x, & \text{if } 1/2 < x \leq 1 \\ 0, & \text{otherwise} \end{cases}$$

Determine their stability properties.

3. Use Maple (or otherwise) to find the (prime) period-3 points of the map

$$x' = 4x(1 - x)$$

Are they stable ?

4. Find a value for the parameter r for which there exists a stable period-3 orbit for the map

$$x' = rx(1 - x)$$