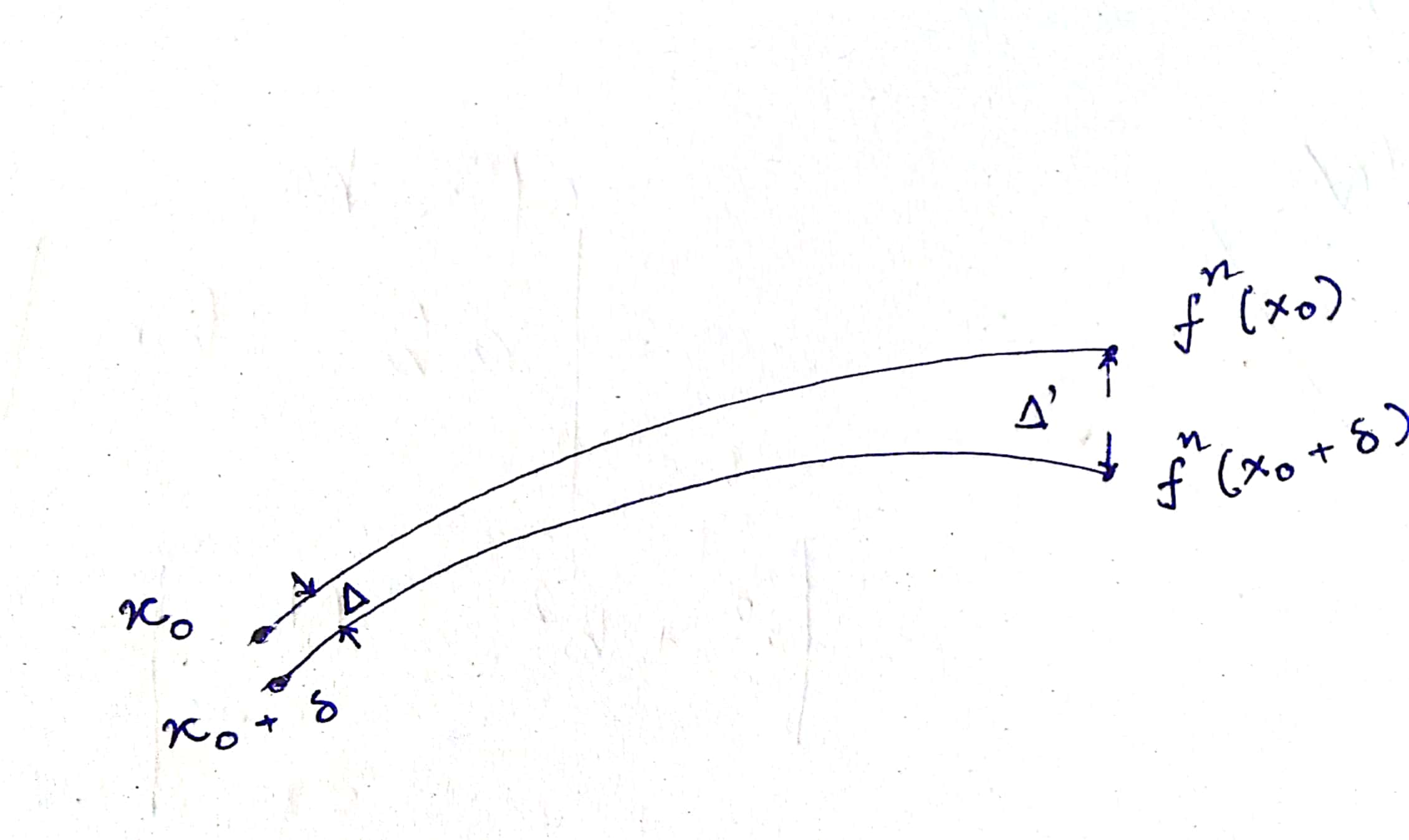
**Lyapunov Exponent**

Lyapunov Exponent is a mathematical characteristic that defines the separation between trajectories of the orbits of certain dynamical systems.



where, is the separation after iterations

Initially, the separation was

Lyapunov showed that

where, is the Lyapunov exponent

Further,

taking on both sides to bring down the Lyapunov exponent

applying limits on the values of and , we get

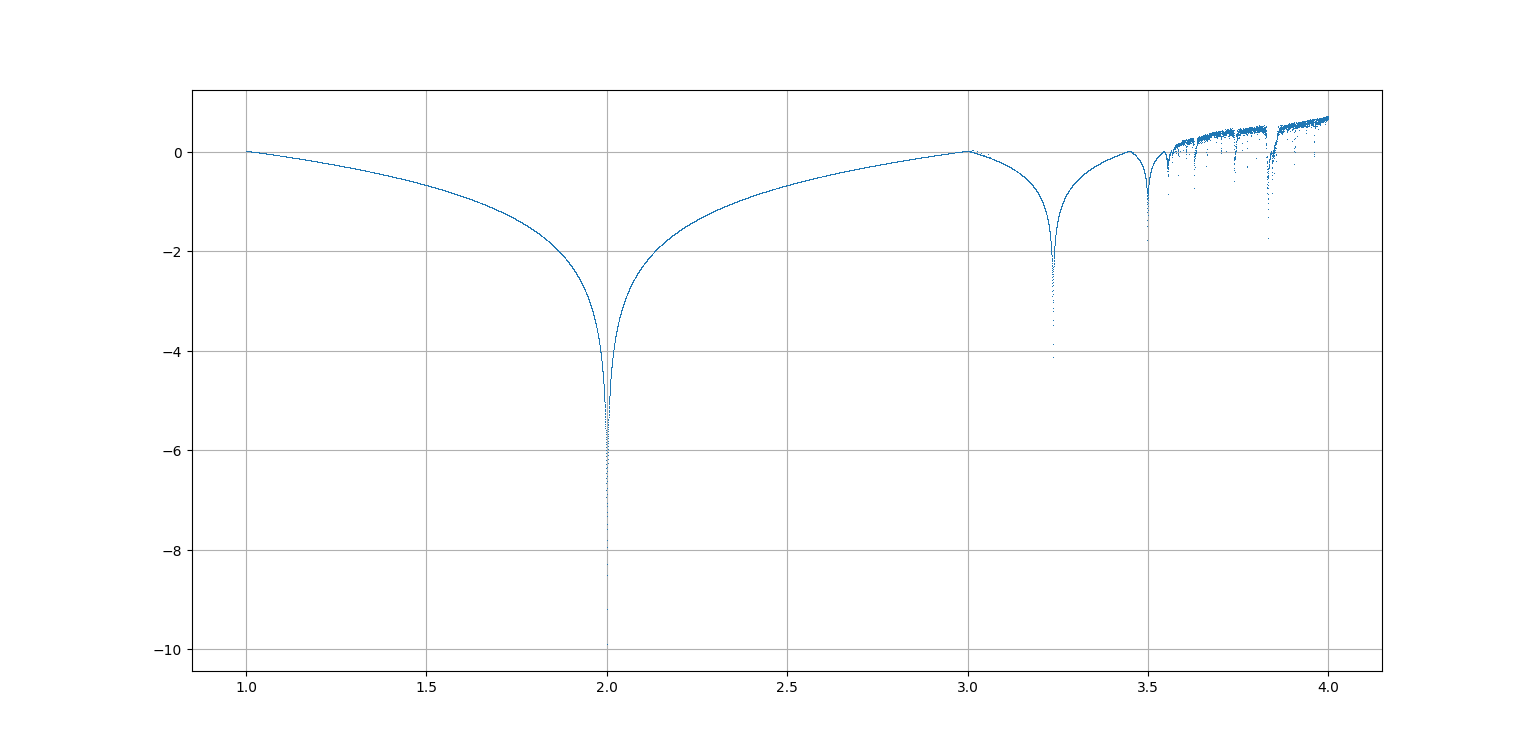
Now, this is nothing but

Now, we can apply the chain rule of differentiation, like

which could be reformatted as

We have applied the same algorithm and have developed a python script to calculate the LEs of Chaotic Maps.

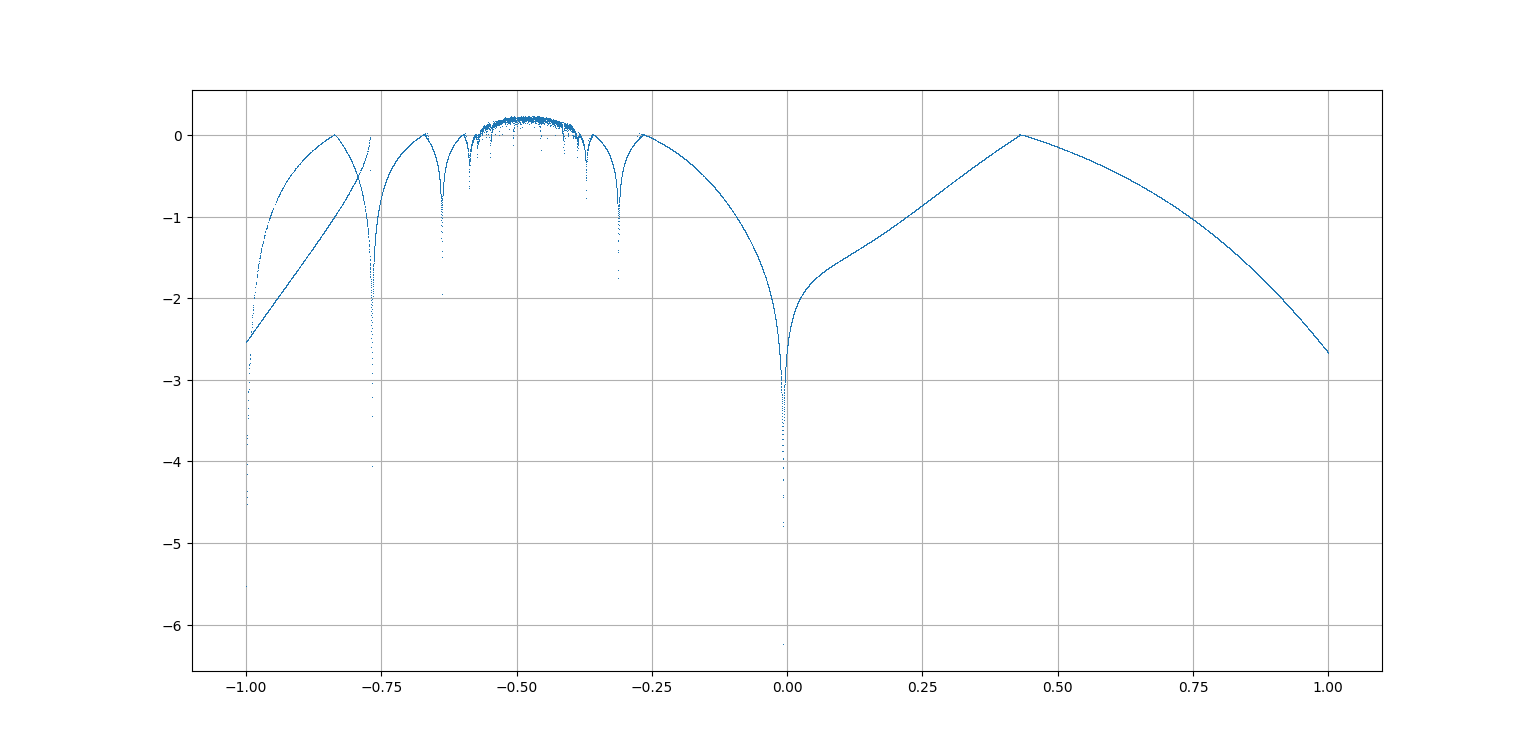
1. **Logistic Maps**

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Here, for the Logistic Map, we have considered the in the range .

Also, we have iterated the map 100 times.

1. **Gauss Maps**

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Here, for the Gauss Map, we have considered the in the range , and .

Also, we have iterated the map 100 times.