9.1.2

EE24BTECH11001 - Aditya Tripathy

Question:

Plot a solution to the following differential equation:

$y' + 5y = 0$

Solution:

To plot a curve in the solution family, we take the initial condition to be

$x_0 = 0, y_0 = 1$

Using Euler's Method, we represent the the differential equation in the following difference equations:

$$x_{n+1} = x_n + h \tag{0.1}$$

$$y_{n+1} - y_n + 5hy_n = 0 \rightarrow y_{n+1} = y_n - 5y_n \tag{0.2}$$

Now we can iteratively generate points which lie close to the graph.
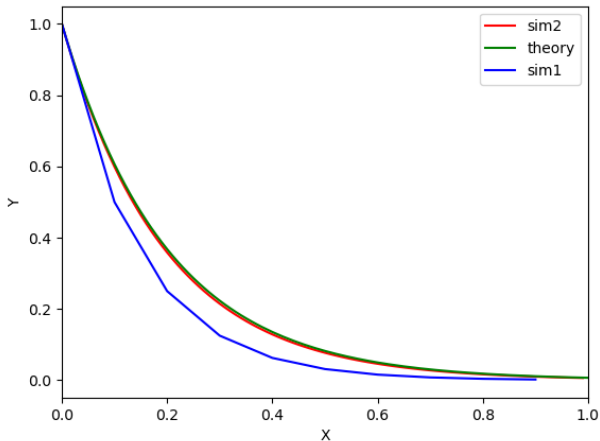
For the following approximate graph, I chose $h = 0.01$ and $h = 0.1$.

Fig. 0.1: Approximate solution of the DE