Assignment-12

Course: SC-374

Computational and Numerical Methods

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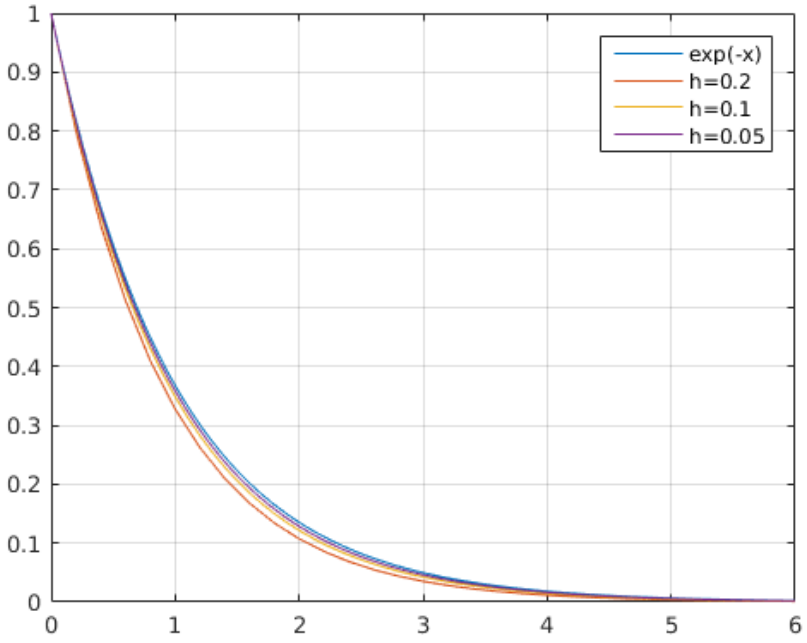
Problem: 1

♦ **Statement:**

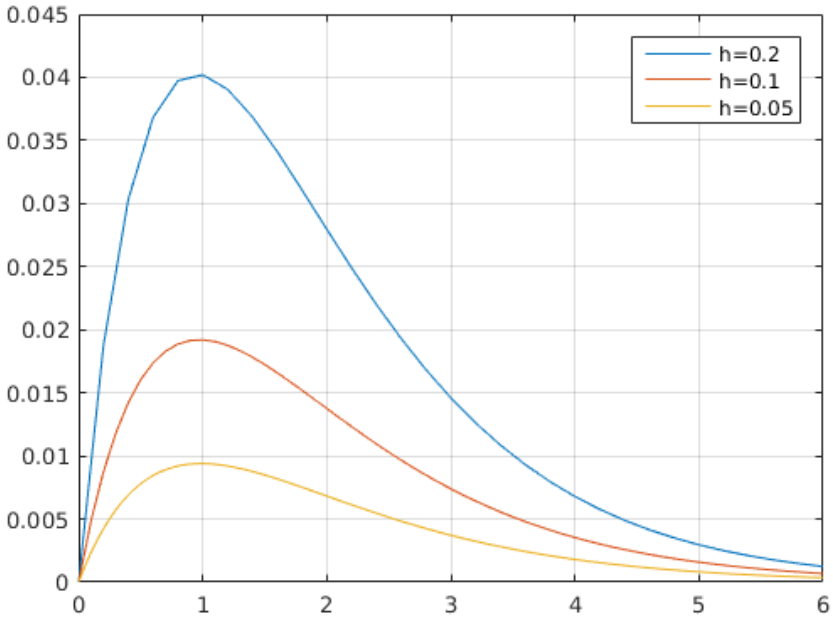
Consider the following initial value problems, Numerically solve both by Euler's method, for range 0<=x<=6 , separately using h = 0.2,0.1,0.05. For each problem, plot the numerical solutions for every value of h along with the analytical solution. Compare the graphs for errors.

(A) Y'(x) = Y(x) , Y(0)=1.

(a) Graph of function for h=0.2 , h=0.1 and h=0.05

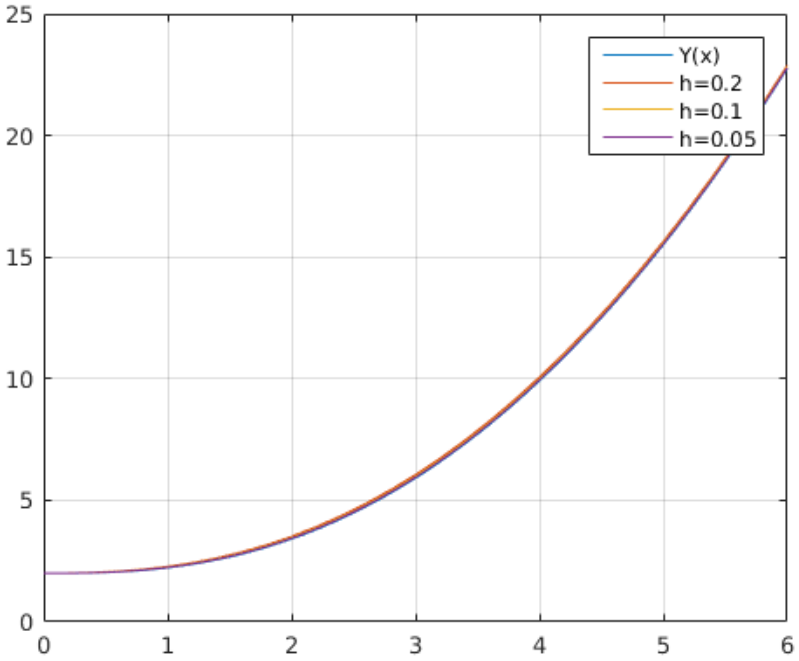


(b) Error function for h=0.2, h=0.1 and h=0.05

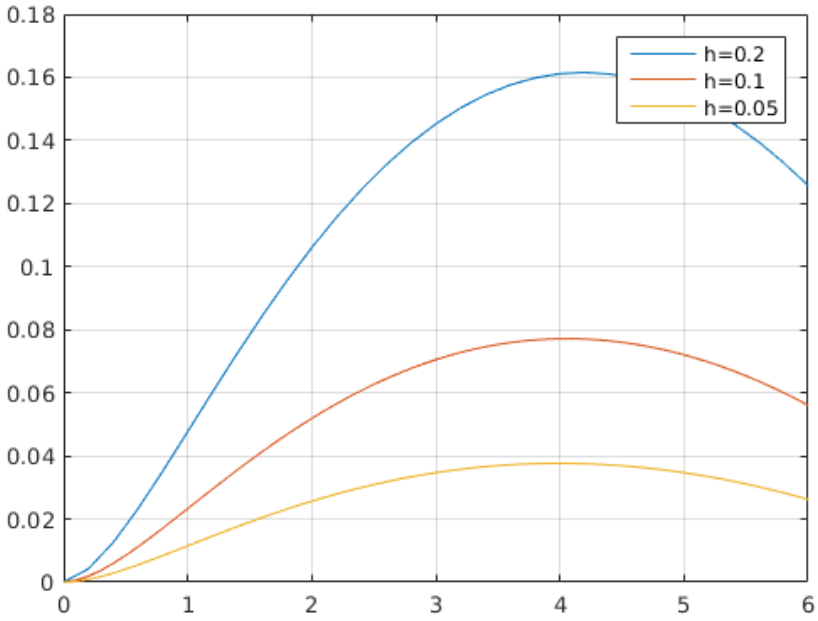


(B) Y'(x) = (Y(x) + x^2 –2) / (x+1) , Y(0)=2.

(a) Graph of function for h=0.2 , h=0.1 and h=0.05



(b) Error function for h=0.2, h=0.1 and h=0.05


h=0.2
h=0.1
h=0.05
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
1
2
3
4
5
6