

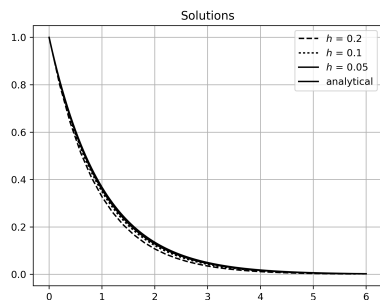
SC-374
Computational and Numerical Methods
Assignment 6

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Chahak Mehta 201501422

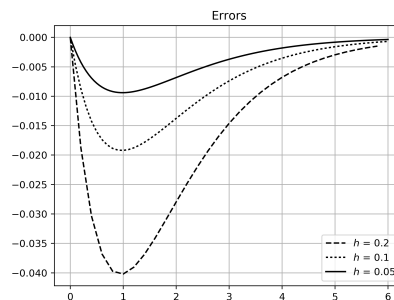
August 19, 2018

1 Euler's method

1.1 $Y' = -Y(x), Y(0) = 1$

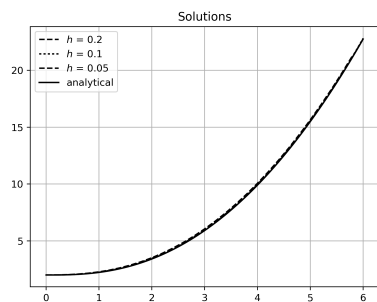


(a) Solutions

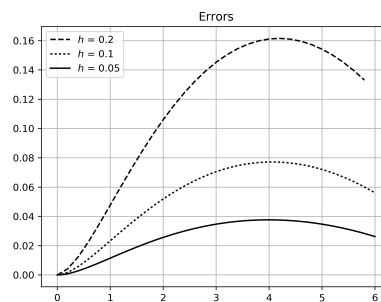


(b) Errors

1.2 $Y'(x) = [Y(x) + x^2 - 2]/(x + 1), Y(0) = 2$



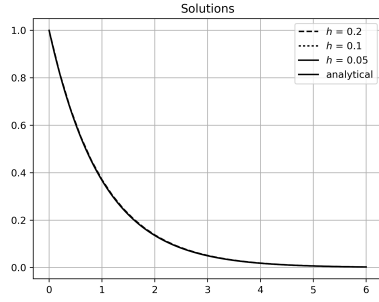
(a) Solutions



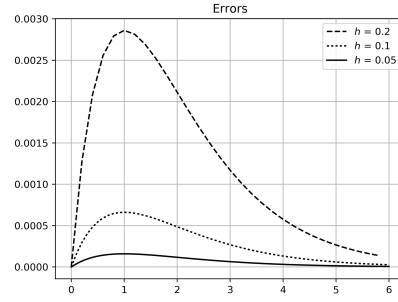
(b) Errors

2 Trapezoidal Method

2.1 $Y' = -Y(x), Y(0) = 1$

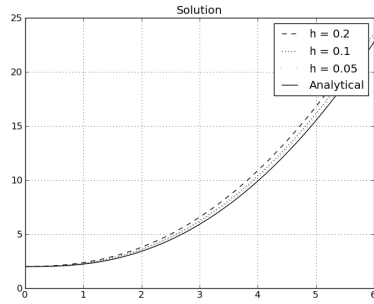


(a) Solutions

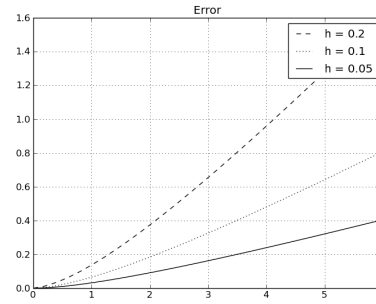


(b) Errors

2.2 $Y'(x) = [Y(x) + x^2 - 2]/(x + 1), Y(0) = 2$



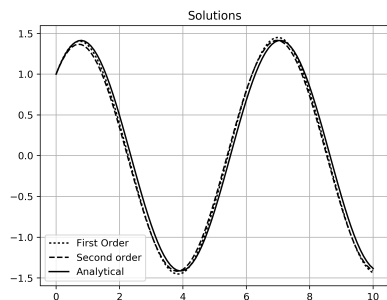
(a) Solutions



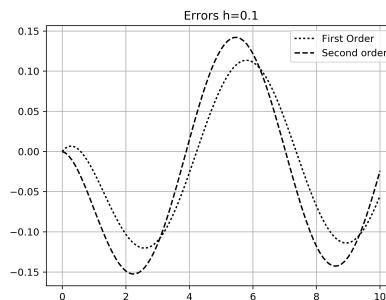
(b) Errors

3 Taylor's Method

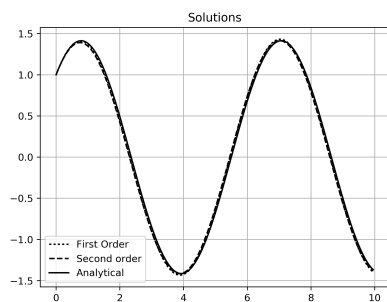
3.1 $Y'(x) = -Y(x) + 2\cos(x), Y(0) = 1$



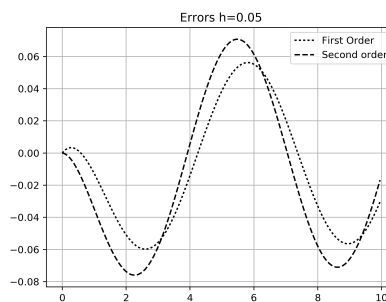
(a) Solutions for $h = 0.1$



(b) Errors for $h = 0.1$



(a) Solutions for $h = 0.05$



(b) Errors for $h = 0.05$