

Assignment 2

Due Wed Sep 16

Write a program to solve the example equation

$$\frac{dy}{dx} = y \tag{1}$$

using the Euler Method, the Euler Predictor-Corrector Method and the 2nd-order Runge-Kutta Method.

For Boundary Conditions, take $y(0) = 1$ and solve it in the interval $[0,3]$.

Compare your results using each method and with the exact results. Make 2 plots, one comparing the solutions (that is intercompare the 3 methods) In the second one intercompare the residuals (from the exact solution).

If your answer is not good enough, half the stepsize until it is okay. If it is too good double the stepsize. What is the optimum stepsize for each method?