

Part of Homework 2, due February 24, 2010

Write a predictor-corrector program in Matlab to solve:

$$x' = x - 2\sin(t), \quad x(0) = 1$$

on the interval $(0, 3)$. The exact solution is

$$x(t) = \cos(t) + \sin(t).$$

Use the Adams-Bashforth scheme of fourth order for the predictor step and the Adams-Moulton scheme of fourth order for the corrector step. Generate the values x_i , $i = 0, \dots, 4$ by using the exact solution. Take a fixed step size $h = .25$. Give in a table the values for the numerical solution, the exact solution and the global error at each mesh point.