INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
THIRUVANANTHAPURAM 695 547

Assignment I

B.Tech - V Semester

MA311 - Probability, Statistics and Numerical Methods

Max. Marks: 5

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1. Consider the nonlinear equation $f(x) = \cos x - 3x + 1$. Write a function using C++ for the fixed-point iterative function $g(x)$. Take an input for the initial guess x_0, tolerance epsilon, and maximum number of iteration n. Implement the fixed-point iteration and print the approximate solution. [2.5]

2. Consider the differential equation $\dfrac{dy}{dx} = x + y + xy$ with initial condition $y(0) = 1$ and step size $h = 0.025$. Write a C++ program to implement Modified Euler's Method and Improved Euler's Method. Compute the value of $y(0.1)$? [2.5]

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