



Department of Mathematics and Natural Sciences

MAT 350

ASSIGNMENT 5

FALL 2023

You have to submit the assignment in a *zip* file containing the f90 and the input/output files using [this form](#). Submission Deadline: November 29, 2023

1. Solve the following BVP in $[1, 2]$ using Linear Shooting Method with $h = 0.05$ and compare with the actual solution $y = 2(x^4 - x^2)$. [Your final output should contain 4 columns: $x(i)$, $y(i)$, *actual solution*(i) and *error*(i)]

$$x^2 \frac{d^2 y}{dx^2} - 5x \frac{dy}{dx} + 8y = 0, \quad y(1) = 0, y(2) = 24.$$

N.B. You MUST use the Euler Method to solve the two auxiliary IVPs that emerges during the process.