



Department of Mathematics and Natural Sciences
MAT120 - Integral Calculus and Differential Equations

Coding Assignment

Copying codes from any websites or other classmates will not be tolerated. Plagiarized submissions will receive 0 points, regardless of the circumstances. Please create a Google Colab file and rename it as nickname_id_section.ipynb. Insert a text cell at the top of your notebook and include your name, ID, and section. Download the notebook and submit it via the provided Google Form.

1. Consider the following ODE:

$$\frac{d^2y}{dt^2} - 6\frac{dy}{dt} + 25y = f(t)$$

Where $f(t) = 50t^3 - 36t^2 - 63t + 18$.

(a) Using SymPy, calculate $\left(\frac{df}{dt}\right)_{t=0}$. (2)

(b) Using Euler's method, calculate and plot the **particular solution**, y_p , of the given ODE for $t = 0$ to $t = 4$. Use a reasonable step size and comments. (8)