Assignment No. 1 MTH401 (Spring 2023)

Total Marks: 10
Due Date: 23rd May, 2023

Section In Charge: Mubashar Hussain

Instructions

1. The course is segmented into four sections, each of which is supervised by a different faculty member. Information regarding the section incharge can be found in the course information section on the LMS.
2. A distinct assignment file has been given to each section, resulting in a total of four separate assignment files. The relevant assignment file can be downloaded from the announcement section of the course. It is important to note that you can only view the announcement relevant to your respective section.
3. You will prepare the solution of assignment on Word file and upload at the assignment interface on LMS as per usual practice.
4. Plagiarism in the submitted assignment will lead to a zero grade. Additionally, any student who submits a solution file that is not relevant to his/her section will also get a zero grade.

Question No. 1 (05 Marks)

Show whether the differential equation is exact or not.

$$\sin(t)\frac{dy}{dt} + t^2e^y\frac{dy}{dt} - \frac{dy}{dt} + y\cos(t) + 2te^y - 3t^2 = 0$$

Question No. 2 (05 Marks)

Show that the differential equation $2ty\frac{dy}{dt} + 2t + y^2 = 0,$
is the total derivative of the potential function $\varphi(t, y(t)) = t^2 + ty^2$