Global Maximum and Minimum, Local Maximum and Minimum

Deadline: 10 October 2021

SML Lab Assignment4

Instruction: It is valid for all questions.
1. Calculate the First order derivative and Second order derivative. Solve using pen and paper and submit the scan copy.
2. Write the python code and generate the output and submit colab file and pdf file.

Q.1 Find the Global maxima and Global minima, Local Minima and Local Maxima of **y= x/(x*x+1)** for the different closed intervals [-2,2], [-3,3], [-5,5], [-10,10], [-50,50], [-75, 75], [-100,100], [-200,200], [-300,300], [-400,400], [-500, 500], [-750,750], [-800, 800], [-900, 900], [-1000, 1000]. Plot and show the variation between local minima, local maxima, global minima, and global maxima over different interval through **scatter plot and Facet plot**.

Q2. Find the Global maxima and Global minima, Local Minima and Local Maxima of **y= x³-9x²-48x+52** for the different closed intervals [-2,2], [-3,3], [-5,5], [-10,10], [-50,50], [-75, 75], [-100,100], [-200,200], [-300,300], [-400,400], [-500, 500], [-750,750], [-800, 800], [-900, 900], [-1000, 1000]. Plot and show the variation between local minima, local maxima, global minima, and global maxima over different interval through **Bar chart and Pair plot**.

Q3. Find the Global maxima and Global minima, Local Minima and Local Maxima of **y= (3²-x) x²/10** for the different **15** closed intervals such as [-2,2]. Plot and show the variation between local minima, local maxima, global minima, and global maxima over different interval through **Heat map and Histogram.**

-------------------All the Best-------------------