MTH101A: 2021 - 2022

End-Semester Exam: Question 3
Time: 10.10 am - 10.45 am

Q3. (a) A farmer wants to build a rectangular box without a top, with a volume of 500 cubic meters. Find the dimension of the box such that the amount of material required is minimum. [10]

(b) Consider the function

$$f(x, y) = (y - 4x^2)(y - x^2).$$

Show that $(0, 0)$ is a critical point of f and find out whether it is a local maximum or local minimum or a saddle point for the function. [6]