MATH 206 (Multivariable Differential and Integral Calculus)

Assignment-1st Semester 1446 H

To be submitted on or before 10-04-1446 H (13-10-2024)

Student Name	Student ID

Question Number	I	II	Total
Mark			

Instructions

- Use any trusted source of information with proper citation and no plagiarism
- Work on this assignment as groups of three

[I] Let $f(x,y) = \begin{cases} \frac{y(x+1)^2+y^2\sin(\pi x)}{(x+1)^2+y^2}, & (x,y) \neq (-1,0) \\ 0, & (x,y) = (-1,0) \end{cases}$

a. **Show** that f is continuous at the point $(-1,0)$

b. **Find** $f_y(-1,0)$

c. **Find** $f_x(0,1)$

[II] Find the extrema and saddle points of $f(x,y) = x^2 + xy$ on the region bounded by the graphs $y = x^2$ and $y = 4$

Good Luck ☺