

"QUIZ" for Lecture 10

NAME: (print!) Daniel Gamero Section: 23

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q10FirstLast.pdf) ASAP BUT NO LATER THAN Oct. 8, 8:00pm

1. Find the local maximum and minimum point(s), the local maximum and minimum values, and saddle point(s) of the function

$$f(x, y) = 12x^2 - 4x^3 + 6y^2 + 12xy$$

$$f_x = 24x - 12x^2 + 12y \quad f_{xx} = 24 - 24x$$

$$f_y = 12y + 12x \quad f_{xy} = 12$$

$$f_{yy} = 12$$

$$12y + 12x = 0, \quad 24x - 12x^2 + 12y = 0$$

Two points:  $(0, 0)$  and  $(1, -1)$

$$D(0, 0) = 144$$

$$D(1, -1) = -144$$

$$f_{xx}(0, 0) = 24$$

Local max: none

Saddle point:  $(1, -1)$

Local min:  $(0, 0)$