"QUIZ" for Lecture 10

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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

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

$f_x = 24x - 12x^2 + 12y \quad | \quad f_y = 12y + 12x$

$f_{xx} = 24 - 24x \qquad f_{yy} = 12 \qquad f_{xy} = 12$

$f_y = 0 \quad f_x = 0 \quad$ at $\quad y = 0 \quad y = -1 \quad x = 0 \quad x = 1 \quad$ (0,0) (1,-1)

$f_{xx} = 24 \quad f_{yy} = 12 \quad f_{xy} = 12 \rightarrow D = 24 \cdot 12 - 12^2 = 144$ min at (0,0) 24

$f_{xx} = 0 \quad f_{yy} = 12 \quad f_{xy} = 12 \rightarrow D = 0 \cdot 12 - 12^2 = -144$ saddle of -144 at (1,-1)