"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

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

$f_x = 24x - 12x^3 + 12y$

$f_{xx} = -24x + 24$

$f_y = 12x + 12y$

$f_{yy} = 12$

$f_{xy} = 12$

$D(a,b) = f_{xx}(a,b) f_{yy}(a,b) - [f_{xy}(a,b)^2]$

$12x + 12y = 24x - 12x^3 + 12y$

$0 = -12x^3 + 12$

$(-24(1) + 24)\, 12 - [12^2] = 0 - 144 = -144$

$(1,0)$ is a saddle point