NAME: (print!) LiuyangShan   **Section:** 24

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

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

$f_x(x, y) = 24x - 12x^2 + 12y \quad f_y(x, y) = 12y + 12x$

$Let\ f_x(x, y) = f_y(x, y) = 0, we\ can\ get\ \begin{cases} x = 1 \\ y = -1 \end{cases}$

$f_{xx}(x, y) = 24 - 24x \quad f_{yy}(x, y) = 12 \quad f_{xy}(x, y) = 0$

$D = 0 * 12 - 0^2 = 0, the\ test\ is\ inconclusive.$