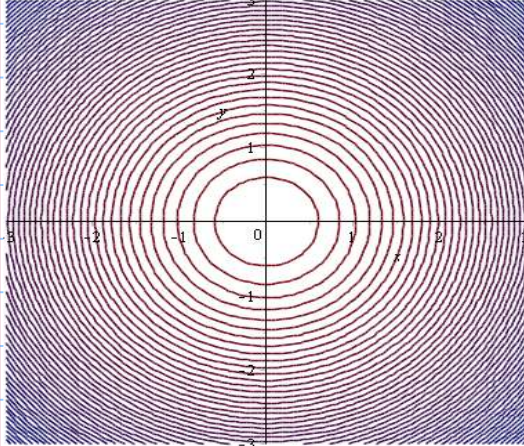


Calc 3 - Assignment

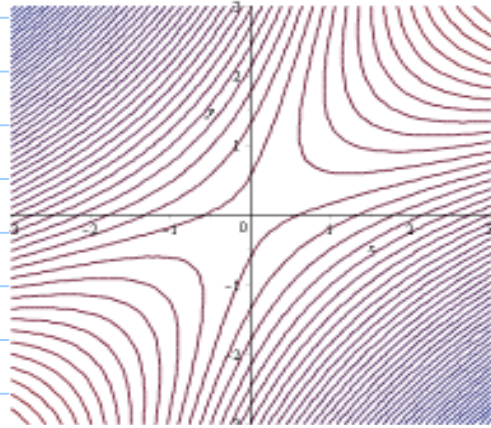
Note Title

10/19/2011

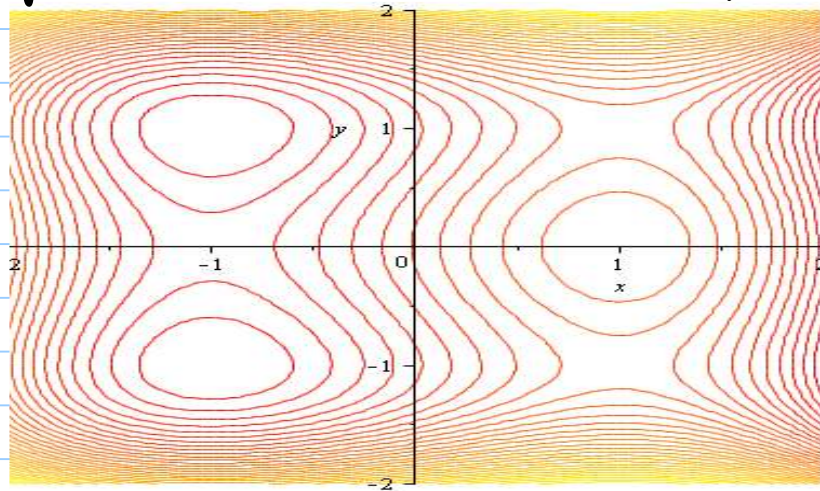
① Use the following contour plots to identify local min, max, or saddle points if any.



$$f(x,y) = x^2 + y^2 + 1$$



$$f(x,y) = x^2 + y^2 - 4xy + 1$$



$$f(x,y) = 3x - x^3 - 2y^2 + y^4 \text{ (this one has 6 (six) critical points)}$$

② Use Maple to draw the surfaces / contour plots for the following functions and guess any max, min, and saddle points.

a) $f(x,y) = x^2 + y^2 + x^2y^2$

b) $g(x,y) = x^4 - 5x^2 + y^2 + 3x + 2$

③ Find all max, min, and saddle points for

$$f(x,y) = 9 - 2x + 4y - x^2 - 4y^2$$

④ Find the local max, min, and saddle points,

if any, for $f(x,y) = x^4 + y^4 - 4xy + 1$.

Visualize your answer by drawing the surface and/or contour plot in Maple.

(Note: there are three critical points)