Practice for Quiz 2
Math 2580
Spring 2016

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January 14th, 2016

If you can answer the following problems, you should be well-prepared for Quiz 2:

1. Sketch the level curves $f(x,y) = c$ of the function $f(x,y) = x^2 - y^2$, for $c = -2, -1, 0, 1, 2$.
2. Sketch the level surface $x^2 + y^2 - z = 4$.
3. Identify[1] and sketch the quadric surface defined by the equation $z^2 + 4y^2 = x^2 + 4$.
4. Show that the intersection of the cone $x^2 + y^2 = z^2$ and the plane $2z = y + 1$ is an ellipse.
5. Define the partial derivative $f_z(x,y,z) = \dfrac{\partial f}{\partial z}(x,y,z)$.
6. Compute the partial derivatives f_x and f_y for the function $f(x,y) = e^{xy}\sin(x+y)$ and evaluate them at the point $(0,0)$.

[1] That is, tell me if it's a paraboloid, cylinder, hyperboloid, etc.