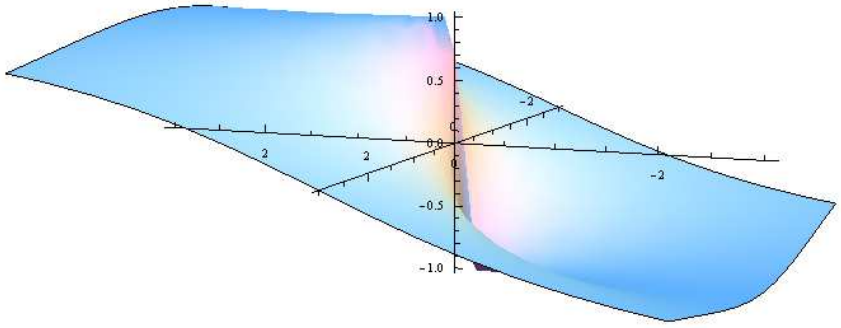
QUIZ 7 - MATH 251 Friday, March 21

YOUR NAME:_____ George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Show (with **full explanations**) that $\lim_{(x,y)\to(0,0)} \frac{x}{\sqrt{x^2+y^2}}$ does not exist.



2. Show that the function $u(x,t) = \frac{1}{2\sqrt{\pi t}} e^{-\frac{x^2}{4t}}$ is a solution of the **heat equation** $\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2}$.

3. Find an equation for the tangent plane to the graph of $f(x, y) = x^3 + y^2 e^x$ at $(x, y) = (0, 1)$.