Name:

1. Find all critical points of
$$f(x, y) = 2x^2 + y^4 - 4xy$$

2. You should have found that $(1, 1)$ is a critical point in the previous problem. Classify it as a local minimum, local maximum or saddle point.

Suppose you wish to maximize $f(x, y) = xe^{-xy}$ subject to the constraint $x^2 + y^2 = 1$. Set up a system of three equations to solve for three variables to find the maximum value. DO NOT ATTEMPT TO SOLVE THE EQUATIONS!