Math 234  
QUIZ 5

Name:

1. (a) Let $f(x, y) = x \sin y$. Find all the critical points of $f$.

(b) Let $g(x, y) = 2 \ln x + \ln y - 4x - 4y$. Find all the critical points of $g$. 
2. Let \( f(x, y) = y^2 - yx^2 - yx^3 + x^5 \).

(a) Draw the zero set of \( f \) and determine the sign of each region of the plane cut out by the zero set.

(b) Using the picture that you’ve drawn, at least how many critical points must \( f \) have?

3. **Bonus:** Write a haiku about mathematics. (Reminder: a traditional haiku has five, seven, then five syllables per line.)