

Name:

1. Find all critical points of

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

2. One of the critical points you found should have $y > 0$. Determine if this point is a local minimum, local maximum, or saddle.

3. Use the method of Lagrange multipliers to minimize

$$f(x, y) = xy$$

subject to the constraint

$$g(x, y) = x + 2y = 5.$$