

Complete the following problems on your own paper. If you use notebook paper, please remove the jagged edges of the paper before submitting your homework. Your solutions must be numbered and submitted in the order the problems were given, legibly written using correct notation and including all mathematical details. If you submit work that is messy, disorganized, or lacking detail, you should expect to receive little credit regardless of having the correct final answer.

Due: 8:00am on Tuesday, November 26

1. Find the tangent plane to the surface

$$x^2y \cos(z^2 + x - y) = 3$$

at the point $P = (-1, 3, 2)$.

2. Find and classify (local maximum, local minimum, or saddle) the critical points of the functions.

(a) $f(x, y) = 2x^3 + xy^2 + 5x^2 + y^2$

(b) $f(x, y) = e^y(y^2 - x^2)$