

**Name:**

1. Let  $f(x, y) = 3x^2y + y^3 - 3x^2 - 3y^2 + 2$ .
  - (a) Verify that  $(0, 0)$ ,  $(0, 2)$ ,  $(1, 1)$ , and  $(-1, 1)$  are all critical points of  $f$ .  
(Note that I'm not asking you to *find* the critical points; you just need to check that these points satisfy the definition.)
  - (b) Classify each of the critical points from part (a) as either a local minimum, local maximum, or saddle point.