Math 225: Calculus III Quiz 5 Feb. 27/29, 1996 Name:\_\_\_\_\_\_Section:\_\_\_\_\_

1. Find the equation of the plane tangent to the surface  $z = y^3 - xy^2 + x^2$ at the point (3, 2, 5).

2. Determine the direction in which the function  $f(x, y, z) = x^2yz^3 - x + y^2$ increases most rapidly at the point (1, 2, 1) and calculate the derivative of f(x, y, z) at (1, 2, 1) in this direction.