Math 225: Calculus III Name:_____
Quiz 4 *Feb. 18/20, 1997* Section:_____

1. Imagine yourself walking on top of the graph of $f(x, y) = x^2y + x^3 + xy^2$. When you are over the point $(1, 1)$, which direction is the steepest climb: the positive x-direction or the positive y-direction? (Justify your answer!).

2. Let $z = y^3 \sin(x^2 + y)$. Suppose $x = g(u, v)$, $y = h(u, v)$, $g(0, 0) = \sqrt{\pi}$, $h(0, 0) = \pi$, and

$$\dot{x}/du = -2, \quad \dot{x}/dv = 3, \quad \dot{y}/du = 5, \quad \dot{y}/dv = -1$$

Compute $\dot{z}/du$ at $(u, v) = (0, 0)$.