Name: October 13, 2016 MAC 2313.9728 Cyr

 $\label{eq:Quiz 7} \ensuremath{\mathbf{Quiz 7}}\xspace$ You must show all work to receive full credit!!

Problem 1. (4 points) Find the directional derivative of the function $f(x, y, z) = xy^2 \arctan z$ at the point (2, 1, 1) in the direction of the vector $\mathbf{v} = \langle 4, -1, 1 \rangle$.

Problem 2. (6 points) Find and classify the critical points of the function $f(x, y) = x^2 + y^4 + 2xy.$