Analysis II — Quiz 6

18.04.08

Q6.1. Implicit Function Theorem.

Given the equations
$$x^2 - y^2 + u^2 + 2v^2 = 1,$$
$$x^2 + y^2 - u^2 - v^2 = 2$$

find all (x, y, u, v) such that u and v can be expressed as differentiable functions of x and y. Find also $\frac{\partial u}{\partial x}$ and $\frac{\partial v}{\partial x}$ in terms of x, y, u and v.