

Homework 15, due 6/2, 10pm

1. [5pts] (a) Find the solution for $u(x, y, z)$

$$yu_x - xu_y + u_z = u^2$$

$$u(x, y, 0) = 1/y$$

- (b) Find the Jacobian J on the initial surface Γ , i.e., at $t = 0$. Is there a unique solution?

Hint: please follow the steps of examples in lecture 16 and you may also refer to some steps in example 2 of lecture 4.