

**Homework 2 (MATH 5400-01)****Name (Print):****Due date: Friday, Sept. 21, 2012**

1. Solve this problem:

$$u_x u_y = 1, \quad u(x,0) = \ln(x)$$

2. Solve this problem:

$$y u_y - x u_x = 2x y u, \quad u(x, x) = x$$

3. Solve this problem:

$$u - x u_x - \frac{1}{2} u_y^2 + x^2 = 0, \quad u(x,0) = x^2 - \frac{x^4}{6}$$