MA 342H
Assignment 1
Due 12 February 2014

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1. Solve the initial value problem

$$xu_x + yu_y = x + y + u, \quad u(x, 1) = 0.$$

2. Solve Burgers' equation

$$u_t + uu_x = 0$$

with initial conditions

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

Be careful about the choice of square root. Where is your solution valid? What happens to the solution and its partial derivatives as you approach the boundary of its domain of definition?