

**QUIZ II:MATH 284**

February 4, 2011.

NAME: \_\_\_\_\_

1. [5pts] Find the explicit solution  $y(x)$  for the (exact) initial value problem

$$\left(\frac{1}{x+y^2} - x\right) dx + \frac{2y}{x+y^2} dy = 0 \quad , \quad y(0) = 1$$

2. [5pts] Find the unique solution of the following linear initial value problem:

$$y' + \frac{2}{x}y = 4x \quad , \quad y(1) = 2$$

3. [5pts] Find the general solution of the following homogeneous problem:

$$\frac{dy}{dx} = \frac{x^2 + xy + y^2}{x^2}$$

4. [5pts] Find the general solution  $y(x)$  of the following Bernoulli equation:

$$\frac{dy}{dx} + \frac{1}{2}y = y^3$$