Advanced Numerical Methods – Homework 1.

Exercise 1
Give all solutions to the ODE

$$y' = \frac{1}{x}y.$$

Exercise 2
Solve the initial value problem

$$y' = 1 + y^2, \qquad y(0) = 0.$$

Exercise 3
Solve the ODE

$$y' = \frac{1}{x}y + \frac{1}{y}.$$

and draw different solutions in a diagram. Indicate the corresponding direction field in your drawing as well.

Hint: Substitute $u(x) = \frac{y(x)}{x}$.

Due Date: 04/18/2013 .