

MATH 2700 - DIFFERENTIAL EQUATIONS, Spring 2008, Kazanci

QUIZ 3 1/21/08

Name : SOLUTION

1. Classify the following differential equations as linear, non-linear; and indicate their orders.

(a)  $u' - x^2u = \cos x$  linear, first order  
(b)  $y \sin(x^3) = e^{\tan(x^3+1)}y'''$  linear, third order  
(c)  $y'' = 1 + y + y^2$  non-linear, second order

1. Find the general solution of the given ODE:

$$y' - 2ty^2 = 0$$

$$\int y^{-2} dy = \int 2t dt$$

$$-y^{-1} = t^2 + C$$

$$y^{-1} = C - t^2$$

$$\boxed{y(t) = \frac{1}{C - t^2}}$$