Math 335 – Applied Analysis, Fall 2001, Professor: Rakhim Aitbayev

August 30, 2001

Name: ________________________________

Quiz 1

1. (5 pt each) State the order of the differential equation and whether the given equation is linear or nonlinear. If the equation is nonlinear then circle the term(s) which makes the equation nonlinear.

(a) \((x^3 - 1)y'' = (e^x + 1)y' + 3xy + \ln x\)

(b) \(y''' + (y + 1)y' + ty' + y = 1\)

2. (10 pt) Verify if the function \(y(x) = \cos(3t/2)\) is a solution of the differential equation

\[4y'' + 9y = 0.\]

3. (10 pt) Consider the initial value problem \(y' = 2y + 1, \quad y(0) = 1.\)

(a) Solve the IVP.

(b) Determine the limiting behavior of the solution as \(t \to \infty.\)