

QUIZ2 SPRING 2005

Problem 1. Find a solution to the initial value problem

$$y'' + 2y' + y = 0, \quad y(0) = 1, \quad y'(0) = 1$$

Problem 2. Find a general solution to the ordinary differential equation

$$y'' + y = t\cos(t) + 1.$$

Problem 3. Find a general solution to the ordinary differential equation

$$y'' - 2y' + y = \frac{e^t}{1+t^2}$$

Problem 4. For the ordinary differential equation

$$\frac{dy}{dt} = y^2(1 - e^y)(y - 1)$$

find all equilibrium solutions, and determine which of these equilibrium solutions are stable and which are unstable.