Differential Equations, Spring 2011
Quiz March 2

Name:

You have 20 minutes to do this quiz. You may not use any books or notes while you do the quiz nor discuss the quiz with anyone. You may not use a calculator. Show your work clearly.

1. Consider the differential equation \( \frac{dy}{dt} + 3y = 4e^{-5t} \)

a. List all terms/terminology that apply to this equation.

b. For what value of \( \alpha \) is \( y(t) = \alpha e^{-5t} \) a solution of the equation.

c. What is the homogenous differential equation associated with this equation? Give the general solution of the homogeneous differential equation. (If the solution is "obvious", you can just state the solution without going through the steps of deriving it).

(More questions on next page).
d. What is the general solution of $\frac{dy}{dt} + 3y = 4e^{-5t}$?

c. Find the particular solution to this equation that satisfies the initial condition $y(0) = 1$

d. Describe the long term behavior of this solution.