Math 333
Homework 7
Forced Second-Order Linear Differential Equations

Note: This homework is due in class on Tuesday, March 25, 2008.

1. Find the general solution of the differential equation
$$y'' - 2y' - 3y = 3e^{2t}.$$

2. Find the general solution of the differential equation
$$y'' - 2y' - 3y = -3te^{-t}.$$

3. Find the general solution of the differential equation
$$y'' + 9y = t^2e^{3t} + 6.$$

4. Find the general solution of the differential equation
$$y'' + 2y' + y = 2e^{-t}.$$

5. Find the general solution of the differential equation
$$2y'' + 3y' + y = t^2 + 3\sin(t).$$

6. Find the general solution of the differential equation
$$y'' + y = 3\sin(2t) + t\cos(2t).$$

7. Find the solution of the initial-value problem
$$y'' + y' - 2y = 2t, \quad y(0) = 0, \quad y'(0) = 1.$$

8. Find the solution of the initial-value problem
$$y'' + 4y = t^2 + 3e^t, \quad y(0) = 0, \quad y'(0) = 2.$$

9. (4.1 #19) Find the general solution of the differential equation
$$y'' + 2y' + y = e^{-t}.$$

10. (4.1 #20) Find a particular solution of the differential equation
$$y'' + py' + qy = c,$$
where p, q, and c are constants.