Take Home Exam 9
Homogeneous, Particular and Total Solutions

Q1. (*General Solution*) Find the general solution.

$y'' + 6y' + 8y = 12\sin 2t$

Q2. (*General Solution*) Find the general solution.

$y'' + 5y' + 4y = 10e^{-3x}$

Q3. (*General Solution*) Find the general solution.

$y'' + 3y' + 2y = 2x^2$

Q4. (*General Solution*) Find the general solution.

$y'' + 4y' + 4y = e^{-x}\cos x$

Q5. (*General Solution*) Find the general solution.

$y'' + 4y' + 8y = e^{-x}$

Q6. (*Initial value Problem*) Solve the initial value problem. Indicate homogeneous, particular and total solutions.

$y'' + 3y' + 2y = 0, \quad y(0) = 2, \quad y'(0) = 1$

Q7. (*Initial value Problem*) Solve the initial value problem. Indicate homogeneous, particular and total solutions.

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

Q8. (*Initial value Problem*) Solve the initial value problem. Indicate homogeneous, particular and total solutions.

$y'' + 4y = 8x^2, \quad y(0) = -2, \quad y'(0) = 0$

Q9. (*Initial value Problem*) Solve the initial value problem. Indicate homogeneous, particular and total solutions.

$y'' + 9y = 2\sin 3x\,, \quad y(0) = 2, \quad y'(0) = 4$

Q10. (*Initial value Problem*) Solve the initial value problem. Indicate homogeneous, particular and total solutions.

$y'' + 4y' + 4y = e^{-2x}sin2x, \quad y(0) = 1, \quad y'(0) = -1$