Extra Homework Set 1

1. Find the correct undetermined coefficients form for a particular solution to the problem

$$y'' - 6y' + 9y = t\sin(2t) + 3t^2\, e^3 t - e^t\, \cos(t).$$

$$(A_1 t + A_2)\sin(2t) + (B_1 t + B_2)\cos(2t) + C_1 t^3 + C_2 t^2 + C_3 t + C_4 + D_1 e^t \cos(t) + D_2 e^t \sin(t)$$

2. Find the correct undetermined coefficients form for a particular solution to the problem

$$y'' - 6y' + 9y = \cos(3t) + \, e^{3t} - t^3 e^t \, \cos(t).$$

$$A\cos(3t) + B\sin(3t) + Ct^2 e^{3t} + (D_1 t^3 + D_2 t^2 + D_3 t + D_4)e^t \cos(t) + (E_1 t^3 + E_2 t^2 + E_3 t + E_4)e^t \sin(t)$$

3. Find the undetermined coefficients **form** of the particular solution for the following problem.

$$y'' + y = t\sin t + 3t^2 e^{-t} + 2t^3 - \cos 3t.$$

$$(A_1 t^2 + A_2 t)\sin(t) + (B_1 t^2 + B_2 t)\cos(t) + (C_1 t^2 + C_2 t + C_3)e^{-t} + D_1 t^3 + D_2 t^2 + D_3 t + D_4$$

4. Find the undetermined coefficients **form** of the particular solution for the following problem.

$$y'' + 2y' + 2y = e^{-t}\sin 2t + t^3 - 7 + t^2 e^{-t}.$$

$$Ae^{-t}\sin(2t) + Be^{-t}\cos(2t) + C_1 t^3 + C_2 t^2 + C_3 t + C_4 + (D_1 t^2 + D_2 t + D_3)e^{-t}$$

5. Find the undetermined coefficients **form** of the particular solution for the following problem.

$$y'' + 2y' + 2y = e^{-t}\sin t + t^2 + 7te^{-t}.$$

$$Ate^{-t}\sin(t) + Bte^{-t}\cos(t) + C_1 t^2 + C_2 t + C_3 + (D_1 t + D_2)e^{-t}$$