Suggested problems 18

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1. Consider the second order nonhomogeneous linear equation

$$y'' + 4y' = 2e^t + t.$$

   (a) Find $y_c(t)$, the solution of its corresponding homogeneous equation.

   (b) Find the general solution of the equation.

2. Consider the second order nonhomogeneous linear equation

$$y'' - 2y' - 3y = 3te^{2t}.$$

   (a) Find $y_c(t)$, the solution of its corresponding homogeneous equation.

   (b) Find the general solution of the equation.

3. What is the **form** of particular solution Y that you would use to solve the following equation using theMethod of Undetermined Coefficient? **DO NOT ATTEMPT TO SOLVE THE COEFFICIENTS.**

   (a) $y'' + 4y' = 11te^{-4t}(\sin 6t - 3\cos 6t) + 7e^{-4t}$;

   (b) $y'' - 8y' + 16y = 9\cos 4t - 5t^2e^{4t}$;

   (c) $y'' - 4y' + 8y = 2e^{2t} - 5t^2 + \sin 2t$;

   (d) $y'' - 4y' + 8y = t^2e^{-t}\cos 5t$.