

Math 211-003: Assignment 5

Due 10/16/2008

These problems are due with work shown by the beginning of class.

Sec 4.5 #2,4,18,20,22,26,28,30,36,42

A small addition to something said in class: When you find a solution, be **very** careful when determining if any part of a forcing term exists in y_h . Let's look at an example:

#EX) Solve

$$y'' - 2y' + y = t^2 e^t$$

If we don't look at our set of homogeneous solutions, we would like to say that our answer would be of the form $y_p = (At^2 + Bt + C)e^t$. Technically, this answer doesn't *fully* exist in y_h , but we run into some contradiction problems if we try to solve the ODE with this form. The problem is that we need *all* of our forcing term to be outside of y_h . In this case, $y_1 = e^t$ and $y_2 = te^t$. So while $At^2 e^t$ isn't in y_h , Bte^t and Ce^t both are. Just taking $y_p = t(At^2 + Bt + C)e^t$ will not be sufficient, since the Cte^t term is still part of y_h . So we have to take $y_p = t^2(At^2 + Bt + C)e^t$ as our attempt.

This issue comes up in #42.