

Differential Equations: Project 5

Due: Monday, 15 July 2013

Instructions: Complete all problems in a neat and organized fashion on your own paper. If you use Wolfram|Alpha, a calculator, or any other resources, please state what you used it for. You will not lose any points for doing so, as long as you're honest about how and why you used it.

Problems. Use the variation of parameters method to find particular solutions of each of the SODEs, then write down the general solution.

1. $y'' + 2y' + 3y = 3e^{-t}$
2. $y'' + 4y' + 4y = t^{-2}e^{-2t}, t > 0$
3. $y'' + 9y = 9\sec^2 3t, 0 < t < \pi/6$
4. $t^2y'' - t(t+2)y' + (t+2)y = 2t^3, t > 0$, given the fundamental solutions $y_1 = t$ and $y_2 = te^t$