Math 3280 Assignment 9, due Friday, November 9th.

The problems on this assignment are all directly related to the material in chapter 5.5 of the text.

(1) Find a particular solution to the ODE $y'' - y' + 2y = 4x + 12$.

(2) Find a particular solution to the ODE $y'' - y' + y = \sin^2(x)$. (Hint: it may be helpful to use a trig identity.)

(3) Find the general solution to $y^{(3)} - y' = e^x$.

For the following two problems, determine the form of the particular solution - note that **you do not have to determine the values of the coefficients**. You should not include terms from the homogeneous (complementary) solution.

(4) Determine the form of the particular solution to $y''' = 9x^2 + 1$.

(5) Determine the form of the particular solution to $y^{(4)} - 16y'' = x^2 \sin(4x) + \sin(4x)$.

(6) Solve the initial value problem $y'' + 2y' + 2y = \cos(3x)$, $y(0) = 0$, $y'(0) = 2$.

(7) Solve the initial value problem $y^{(4)} - y = 1$, $y(0) = y'(0) = y''(0) = y^{(3)}(0) = 0$.

(8) Use the variation of parameters method to find the general solution of
$$y'' - 2y' + y = e^x/x$$

(9) Use the variation of parameters method to find the general solution of
$$y'' + 9y = 12\sec(3x).$$