Homework 5

Last name: _____
First name: _____
Section: _____

Due at the beginning of the class on **Wednesday** *November 9th, 2016.*

Exercise 1. Find the general solution to

1. $y'' + 7y' + 6y = 3\sin 2x$.

2. $y'' + 6y' + 8y = 2t - 3$.

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

4. $y'' - 4y' + 4y = x^{-3}e^{2x}$

5. $y'' + 9y = \sec^3(3t)$.

6. $y'' + 16y = e^{-4x} + 3\sin 4x.$

Exercise 2. Find the solution to the initial value problem

$$y'' - 2y' + y = t^2, \qquad y(0) = 1, \quad y'(0) = 0.$$

Exercise 3. Given that $y_1 = t^{-1}$ is solution to the homogeneous equation

$$t^2y'' + 3ty' + y = 0 \qquad t > 0.$$

1. Use the method of reduction of order to find the general solution to the homogeneous equation.

2. Use the variation of parameters to find the general solution to

$$t^2y'' + 3ty' + y = \frac{1}{t}, \qquad t > 0.$$