# Math 246 Homework Assignment Three (HW-3)

Do the following problems showing all your work. Be sure to submit your solutions in PDF format to the Assignment area. (Point values are given in the square brackets.)

1. [3] Find the general solution for the differential equation:

$$3\frac{d^2y}{dx^2} + 7\frac{dy}{dx} - 11y = 0$$

2. [4] Find the solution for the initial value problem:

$$\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 9y = 0; y(1) = 1; y'(1) = 1$$

3. [4] Find the general solution for the differential equation:

$$4\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 26y = 0$$

4. [4] Find the solution for the initial value problem:

$$\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = 0; y(0) = 1; y'(0) = -2$$

5. [4] Find the particular solution for the differential equation:

$$\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + 2y = 4xe^{-x}\cos(x)$$

6. [2] Determine the *form* of the particular solution for the equation (do *not* evaluate the coefficients):

$$\frac{d^2y}{dx^2} - \frac{dy}{dx} - 12y = 2x^6e^{-3x}$$

7. [4] Find the particular solution (using undetermined coefficients) for the differential equation:

$$y^{(4)} - 3\frac{d^2y}{dx^2} - 8y = \sin(x)$$