

# Homework Assignment #9

Fall 2013 - MATH308

due Friday Oct 11 at the beginning of class

Topics covered : *the method of variation of parameter, sections 3.6)*

1. Use the method of variation of parameter to solve the following problems:

- (a) Find the general solution of  $3y'' - 6y' + 6y = e^x \sec x$ .
- (b) Solve the equation  $y'' - 4y' + 4y = (x^2 + 1)e^{2x}$  subject to the initial conditions  $y(0) = 1$ ,  $y'(0) = 0$ .
- (c) The functions  $y_1(x) = x^{-1/2} \cos x$  and  $y_2(x) = x^{-1/2} \sin x$  are known as fundamental set of  $x^2 y'' + xy' + (x^2 - \frac{1}{4})y = 0$ ,  $x > 0$ . Find the general solution of  $x^2 y'' + xy' + (x^2 - \frac{1}{4})y = x^{3/2}$ .