Mathematics 352
Variation of Parameters

April 12, 2013 Name: _____

Due: April 15, 2013

Introduction. In this activity you will get some practice using the method of variation of parameters to solve inhomogeneous differential equations $ay'' + by' + cy = g(t)$ in which the inhomogeneous term $g(t)$ is not suitable for the method of undetermined coefficients.

1. Use variation of parameters to find the general solution of the equation

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

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

$$y'' - 4y' + 5y = e^{-4x}.$$

3. Verify that $y_1 = t^2$ and $y_2 = t^{-1}$ are solutions of the equation

$$t^2 y'' - 2y = 0.$$

4. Use variation of parameters to find the general solution of the equation

$$t^2 y'' - 2y = 3t^2 - 1.$$

You can assume $t > 0$ wherever necessary.