3521 Fall 2010 R01 & R02
Written Section of Final
Name: _____

Show your work. Say if you used a calculator.

(1)

Solve the differential equation $y'' + 4y' + 5y = 2xe^x$.

(2) Solve the differential equation $x^2 y'' + 5xy' + 5y = 0$.

(3)

Solve the system $\mathbf{X}' = \begin{pmatrix} -3 & -1 \\ 1 & -5 \end{pmatrix} \mathbf{X}.$

(4)

Solve the system $\mathbf{X}' = \begin{pmatrix} 3 & 2 & 4 \\ 2 & 0 & 2 \\ 4 & 2 & 3 \end{pmatrix} \mathbf{X}.$

(5)

Solve the system $X' = \begin{pmatrix} 3 & -2 \\ 1 & 5 \end{pmatrix} X.$