Third Exam  
*Wednesday, November 3, 2004*

This exam is closed book. Make sure your name is on all pages. Show all work, and show it in a logical and organized manner. The first problem is worth 40 points and the second problem is worth 60 points. You may keep this exam sheet.

1. Find the general solution (except at $t = 0$) to the Euler equation

$$t^2y'' + 5ty' + 3y = 0.$$  

You must show all steps in your solution process.

2. Find the terms up to and including $t^4$ for the series solution to the following initial value problem:

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