McGill University Math 325B: Differential Equations

Assignment 9: due Thursday, April 11, 2002

1. Find the series solution at x = 0 for the equation

$$y'' + x^2y' + 2xy = 0.$$

For what values of x do the series involved converge?

- 2. Show that the equation $2x^2y'' + (x^2 x)y' + y = 0$ (x > 0) has a regular singular point at x = 0. Find the series solution of the equation at x = 0.
- 3. Find the series solution of the equation xy'' + y' + y = 0 (x > 0) at x = 0.