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**Math 333**  
**Quiz 9**  
**Due Thursday, April 24, 2008**

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This take-home quiz is due on Thursday, April 24, 2008. You may use your class notes, textbook, and lecture notes posted on the course webpage. However, you must complete the quiz on your own.

1. Solve the differential equation

$$y'' - xy' - y = 0$$

by means of a power series centered at  $x_0 = 0$ . Find the general recurrence relation, and write down the first eight terms (i.e. until the  $x^7$  term) of the series solution (in terms of the arbitrary constants  $a_0$  and  $a_1$ ).

2. Solve the differential equation

$$(1 + x^2)y'' - 4xy' + 6y = 0$$

by means of a power series centered at  $x_0 = 0$ .