

Millersville University
Department of Mathematics
MATH 365, *Ordinary Differential Equations*, Homework 7
March 26, 2004

Please answer the following questions. Answers without justifying work will receive no credit. Partial credit will be given as appropriate, do not leave any problem blank. Each problem is worth 10 points. Your completed assignment is due at class time on Wednesday, March 31, 2004.

1. Find the power series centered at $x_0 = 0$ which solves the following differential equation. Your solution should contain at least the first four non-zero terms in the series solution.

$$y'' + xy' + y = 0$$

2. Find the power series centered at $x_0 = 0$ which solves the following initial value problem. Your solution should contain at least the first four non-zero terms in the series solution.

$$(1 - x^2)y'' + y = 0; \quad y(0) = 1, \quad y'(0) = 0$$