

Fourth Exam

Monday, November 4, 2013

This exam is closed book, but you may use calculators. Make sure your name is on all pages. Show all work, and show it in a logical and organized manner.

- Consider the initial value problem

$$(x - 1)y'' + y' + y = 0, \quad y(0) = 1, \quad y'(0) = 0.$$

1. Write down a recursion relation for the coefficients a_n of the power series solution

$$y(x) = \sum_{n=0}^{\infty} a_n x^n.$$

2. Write down the terms up to and including the x^4 term for the solution to the initial value problem.