Math 2280 - Lecture 47

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Fall 2013

Today I'm not going to introduce any new material. Instead, I'm just going to work some difficult problems because I know many of you are struggling with some of the material from chapters 8 and 9. Chapter 8 in particular. So, I figured it might be helpful to see a few more problems worked out in detail.

Series Solutions Near Ordinary Points

Example - Find the general solution to the differential equation below in terms of power series in x.

$$y'' - x^2 y' - 3xy = 0.$$

More room for example problem.

Even MOAR room for the example problem.

Series Solutions Near Regular Singular Points

Example - Find the general solution to the differential equation:

$$2xy'' - y' - y = 0.$$

More room for the example problem.

More room for the example problem.

Calculating Fourier Series

Example - Calculate the Fourier series for the periodic function $f(t)$ where one period is given by:

$$f(t) = t, \qquad -2 < t < 2.$$