Physics 360/Math 360 MWF 11:00 - 11:50 PM, Room: CST 225

Instructor: Michael Lerner, CST 213, Phone: 765-983-1784

Assignment 1, Due Monday Jan 29, 5:00PM.

In class, we reviewed series and were introduced to power series.

1. (5 points) e^x
   (a) Find the series expansion
   (b) Find the region of convergence
2. (5 points) $\ln(1+x)$
   (a) Find the series expansion
   (b) Find the region of convergence
3. (5 points) $(1+x)^p$
   (a) Find the series expansion
   (b) Find the region of convergence
4. (5 points) What is the small angle approximation? Knowing what you know about the topics we've covered in this class, how could you justify the small angle approximation?

The main goal of the next part of the class is to get familiar with the mechanics of working with series and complex numbers. So, this assignment (like the next one) includes many short problems. The selection below is a good one to get you acquainted with the techniques. The starred problems are the ones you're required to turn in, but the others are useful to test your knowledge.

5. (5 points) These three: §1.10: 1*,2*,3,4,5; §1.12: 1*
6. (5 points) These three: §1.13: 5ab, 7ab*, 9ab, 10ab, 20*; §1.14: 3*