Reading Assignment for Section 8.4

MATH 131: Calculus II, Sections 2 and 3
Fall Semester 2015

Follow the general guidelines for the Reading Assignment (the salmon colored handout). Be sure to include and label all four standard parts 1,2,3,4 of the Reading Assignment in what you hand in. Be sure to **staple** together pages if you have more than one, and include your **name** at the top of at least the first page. Neatness is expected!!!

Due: by the beginning of class on Wednesday, November 18th

Read:

Section 8.4, pages 627-638: The Divergence and Integral Tests. Do the Quick Checks along the way! Check your answers to them at the end of the Exercises for Section 8.4!

Notes:

The Geometric Series and the Telescoping Series are cool and nice (because we can determine whether or not they converge and what they converge to relatively quickly). But many series are not of these forms. For the rest of this chapter we will be learning different techniques to help us determine whether or not different series converge or diverge. Interestingly enough, though we will be able to determine whether other types of series converge or diverge, we will not necessarily be able to determine what they converge to if they converge! In this section we look at two new tests, one of which uses integration!

Remember that your answers should include complete sentences for every question (this time, there is an exception to this - you do not have to write sentences for c and e, but you should show your work!). Be sure to address all parts of each question.

Reading Questions for part (1):

a) What does the Divergence Test say?

b) What is the Harmonic Series? Is it convergent or divergent? Does your answer contradict the Divergence Test? Why or why not?

c) What is the Integral Test? Explain how and why it works in both diagrams and words.

d) Suppose $a_k = f(k)$ for all positive integers k, that is, the terms of the sequence agree with the function f on all the positive integers. If $\int_1^{\infty} f(x)dx$ is convergent to 7, can we say that $\sum_{k=1}^{\infty} a_k$ converges to 7 as well? Why or why not? It may help to reflect on your diagrams in part (c).

Remember parts 2-4 on the salmon handout! **Reread the directions for these parts to be sure that you are answering the questions.** If you have lost your salmon handout, there is a link on our website to the Homework Guidelines.