BONUS: Reading Assignment for Section 9.3

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 Friday, December 11th. Earn up to 5 bonus points for your homework grade by completing this assignment. To earn all five points, be sure that your answers use full sentences and that you thoroughly answer ALL questions.

Read:

Section 9.3, pages 684-694: Taylor Series. (Note that you do not have to read the whole section!) **ALSO** reread Section 9.2!!! Do the Quick Checks along the way! Check your answers to them at the end of the Exercises for Section 9.3!

Notes:

In this section we use our work in Section 9.1 with finite Taylor polynomials to create Taylor series, in other words, infinite polynomials of a particular form. It turns out that we can use these to represent functions, which is especially helpful when we are trying to evaluate an integral of a hard function to which our known techniques do not apply like $\int e^{x^2} dx$ or $\int \sin(x^2) dx$. Why is it helpful? Isn't it easy to integrate a polynomial?! (See Section 9.4 page 699.)

Remember that your answers should include complete sentences for every question. Be sure to address all parts of each question.

Reading Questions for part (1):

a) Explain the differences and similarities between the Taylor and MacLaurin series.

b) Can all functions have Taylor series? Why or why not? Explain carefully but not necessarily verbosely.

c) Illustrate with number lines AND describe with words the different forms an interval of convergence might have. (Note: You may want to go back to Section 9.2 to help you with this answer. Check out Figure 9.16 on page 677, for example.)

d) How do we find the interval of convergence of a Taylor series? (Note: In addition to 9.3, you may want to go back to Section 9.2 to help you with this answer.)

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.