Math 8
Fall 2015

Written Homework
Due Friday, September 18

Note: Standard (not preliminary) written homework is graded on your work and your explanations, not just on your answer.

Explanations are important for many reasons. Being able to communicate what you know shows a depth of understanding beyond that of being able to get the right answer to a problem. Doing the mental work of putting explanations into words helps create that depth of understanding. On exams, we will grade your work and not just your answers, so this is good practice for taking exams.

For all these reasons, be sure to: show all your work; explain your reasoning; use clear English; write neatly so all this effort does not go to waste.

Written homework is always due at the *beginning* of class.

Homework: For each of the following problems, write out enough terms of the 100^{th} Taylor polynomial $P_{100}(x)$, for the function $f(x)$ at the point a, to make the pattern obvious.

Use whatever notation is most clear. For example, the pattern in the sequence

$$2,\ 6,\ 12,\ 20,\ 30,\ \ldots$$

becomes much easier to see if you write it as

$$(1)(2),\ (2)(3),\ (3)(4),\ (4)(5),\ (5)(6),\ \ldots$$

Make sure you include enough terms; one or two extra won't hurt. Also make sure you show your work.

1. $f(x) = e^x$
   $a = 0$
2. $f(x) = \ln(x)$
   $a = 1$
3. $f(x) = \cos(x)$
   $a = \dfrac{\pi}{4}$