Math 8
Winter 2020

Written Homework Day 1
Assigned Monday, January 6

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 10:00 AM on the following Monday. It must be submitted electronically, and then you must bring a hard copy to class. Please see the general information on the course web page.

Homework: Find the degree 100 Taylor polynomial $T_{100}(x)$ for the function $f(x) = ln(x)$ centered at $x = 1$.

For this problem, you may use summation (Σ) notation, but it is fine to use an ellipsis ($\cdots$). Your answer could look like

$$T_{100}(x) = \sum_{k=0}^{100} k(x+2)^k$$

or like

$$T_{100}(x) = 0 + (x+2) + 2(x+2)^2 + 3(x+2)^3 + 4(x+2)^4 + \cdots + 100(x+2)^{100}.$$

(Neither of these answers are at all correct.) If you use an ellipsis, be sure to include enough terms to make the pattern clear; one or two extra won't hurt. Also be sure to include the last term.

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

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