# MTH5103 Complex Variables 2014-2015

## Further Remarks on Tutorials

Emphasis will be on problem-solving strategies, multi-step problems, and clear, well-written write-ups of solutions. If a workshop submission were worth 10 points, there would be 5 points for mathematical correctness and 5 points for concise exposition.

Here, I compile a collection of comments and suggestions given by Instructors and TAs who have marked workshop-style submissions for your consideration.

**Suggestions on approaching your workshop submission.**

- Try not to take help of any other devices (e.g. laptops/calculators) in class.

- Show your work; don't just say what you have done. For example, when you present your solution to finding the slope of a line that is tangent to the graph $y = e^x \cos x$ at $x = 0$, don't just write: "To find the slope, I took the derivative of the function, and then plugged in 0, and I got 1." Instead, show the work by writing out the following:

  "Using the chain rule, we have
  $$f'(x) = e^x \cos x + e^x(-\sin x).$$
  The slope of the tangent line to $y = f(x)$ at $x = 0$ is $f'(0)$.
  $$\begin{aligned} f'(0) &= e^0 * \cos 0 + e^0 * (-\sin 0) \\ &= 1 * 1 + 1 * 0 \\ &= 1. \end{aligned}$$
  The slope of the tangent line is 1."

- Use full sentences to describe your thoughts. When we write "Please explain your steps using coherent sentences," we would like you to do precisely that. Don't just write a single word answers to questions that require discussions.

- Justify all your steps. A good rule of thumb is, whenever there is a calculation that you cannot do in your head, write it down and explain what you did. This applies to, for example, the bounds of an integral, the function in the integrand, what are the terms of a series, what function defines the slope field of a differential equation, etc. *Explaining where you get your values/functions from is an important part of the workshop exercise.*

- Proof-read your work. Make sure each sentence makes sense, not only to you, but to someone else. A good check is to ask yourself some time after you have written your workshop: "what does it mean for ..." If you write, "these regions are inverses of one another," stop to ask yourself, what does it mean for regions to be inverses of each other? When writing "I can set these two equations equal to each other," ask yourself "what does THAT mean?"

  In these instances, what you may have meant to write is "one region is similar to or is a reflection of another"; "I set this mathematical expressions equal to that one (and not equations)."

- Ask someone else to read through your work and see if your writing is clear. They may also have suggestions on how to better phrase an explanation.

Translating "mathematics to words" and then "words to mathematics" is a skill you will be learning throughout your undergraduate career and beyond, so I urge you to actively engage with your colleagues during the tutorials and make good use of your very capable and enthusiastic Instructors and TAs this semester. Good luck!

–SB, January 2015