

Math 1152 Written Homework 8

Due: Tuesday, July 12th in Gradescope.

- Calculators are permitted EXCEPT those calculators that have symbolic algebra or calculus capabilities.
- SHOW ALL WORK!
- A completed version of this document is due to be uploaded to Gradescope by 11:59pm on **Tuesday, July 12th**.
- If you have difficulties using Gradescope, see pages under the Gradescope header in the Modules section of our Carmen page for help.
- Ideally, this can be completed on an iPad or android tablet using an app like One Note, Notability, Papyrus, etc. - if you don't have access to one of these options, then printing and scanning or using a smartphone document-scanning feature to generate a pdf to upload will also work.
- If you have difficulties uploading the assignment, email a pdf to your recitation instructor.
- This homework will be graded via random subset selection - not every part of every question will be looked at by the grader.
- Rubrics to applicable questions will be provided later.

Question 1. The ICM (International Conference of Mathematics) is taking place right now, and in particular the 2022 Fields Medals (often referred to as the “Nobel Prize” of Mathematics) have been awarded.

Read (some of) this article¹ about 2022 Fields Medal recipient June Huh. Then

1. What did you think of the article? Were you surprised by any of what you read?

2. Look up some of the mathematical terms in the article you weren’t familiar with and list them here

(a)

(b)

3. Bonus: One of the collaborators mentioned in the article is an OSU Professor. Which one was it?

¹<https://www.quantamagazine.org/june-huh-high-school-dropout-wins-the-fields-medal-20220705/>

Question 2.

Consider the power series

$$\sum_{n=0}^{\infty} 2^n x^n.$$

What is its radius of convergence?

Question 3.

Consider the power series

$$\sum_{n=0}^{\infty} p(n)a_n x^n.$$

where $p(n)$ is any polynomial.

(a) Why is it that the radius of convergence is the same no matter what p is?

(b) What does this tell us about derivatives of power series?