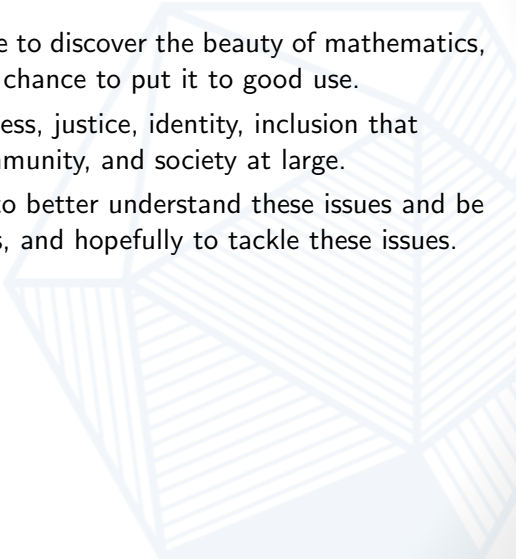# The Definition of a Mathematician

Rosalie Bélanger-Rioux,
McGill University, Faculty Lecturer
Massachusetts Institute of Technology, Applied Mathematics PhD '14
McGill University, Honours Applied Mathematics BSc '09
Contact: rosaliebr.thescholr.com

Sara Rezvi
The University of Illinois at Chicago, Doctoral Student
The University of Chicago, AB '06, MAT '08 Mathematics/Education
Contact: rezvi@uic.edu

Goals

- Everyone should have a chance to discover the beauty of mathematics, and everyone should have the chance to put it to good use.
- There are issues of equity, access, justice, identity, inclusion that pervade our mathematics community, and society at large.
- Our goal is to give you tools to better understand these issues and be able to explain them to others, and hopefully to tackle these issues.

"In true dialogue, both sides are willing to change. We have to appreciate that truth can be received from outside of – not only within – our own group. If we do not believe that, entering into dialogue would be a waste of time. If we think we monopolize the truth and we still organize a dialogue, it is not authentic. We have to believe that by engaging in dialogue with other persons, we have the possibility of making a change within ourselves, that we can become deeper."
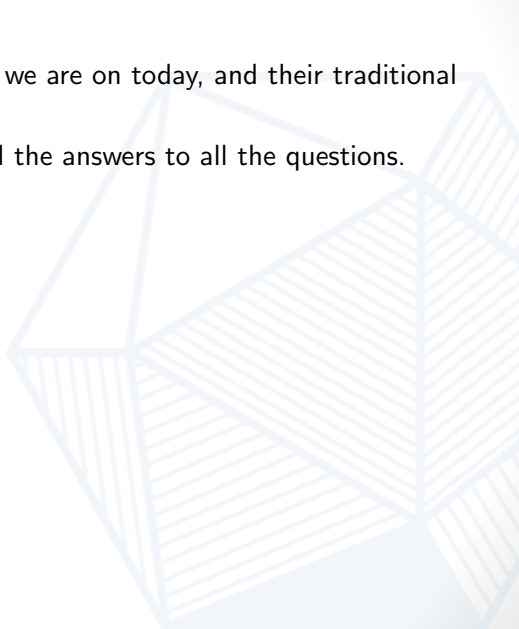
$\sim$ Thich Nhat Hanh

Disclaimers

- Let us acknowledge the lands we are on today, and their traditional custodians.

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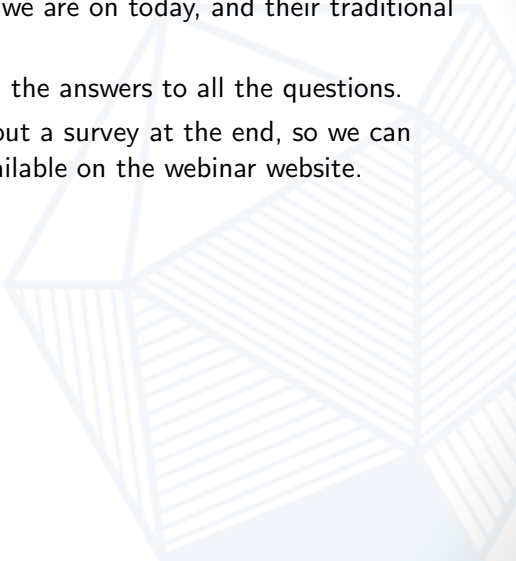
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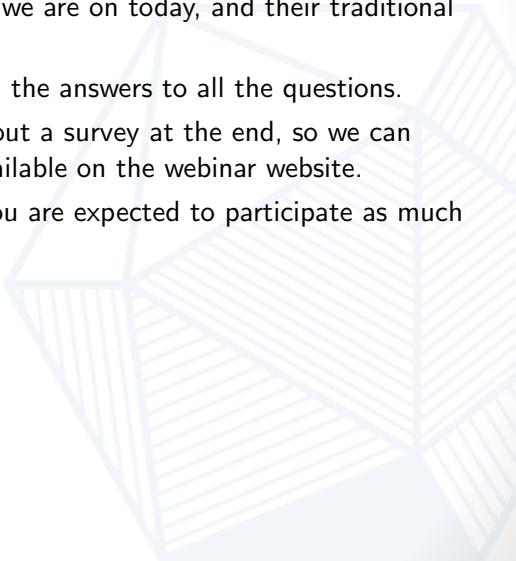- We will use active learning, you are expected to participate as much as possible.

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- We will start with some norms for participation in this workshop.

Norms for participation in this workshop

- Maintain a learner stance and remain open to new thinking

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- Stay engaged, ask questions

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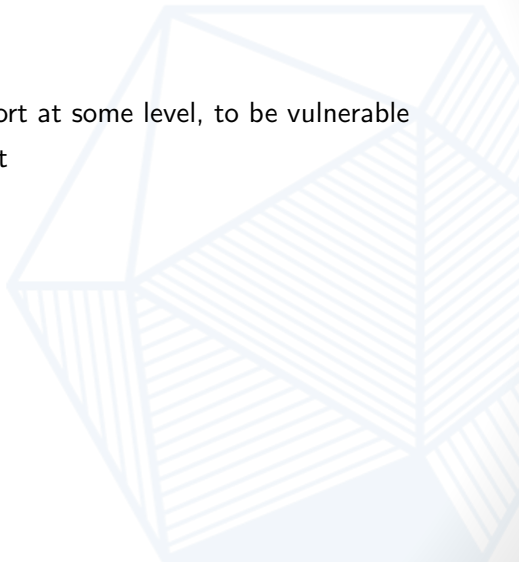- Be aware of intent and impact

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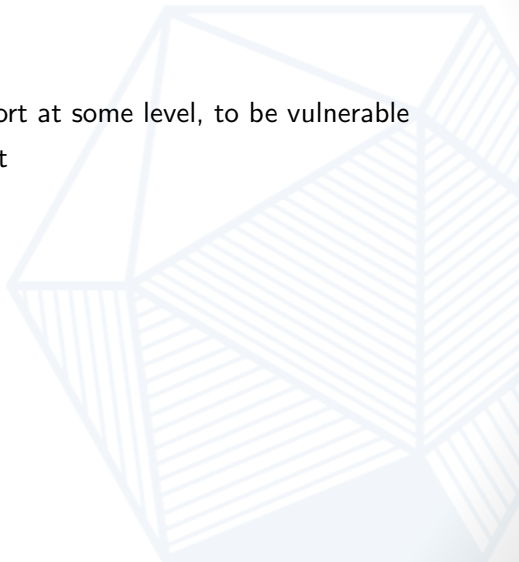
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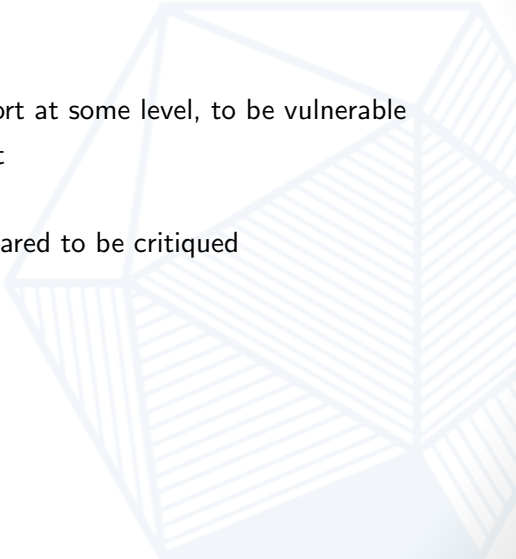- If you offer a critique, be prepared to be critiqued

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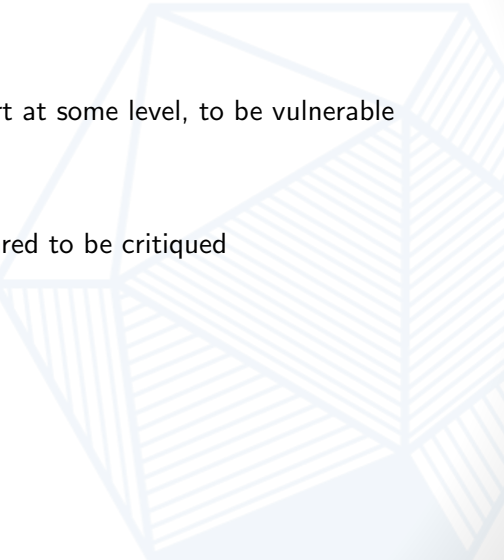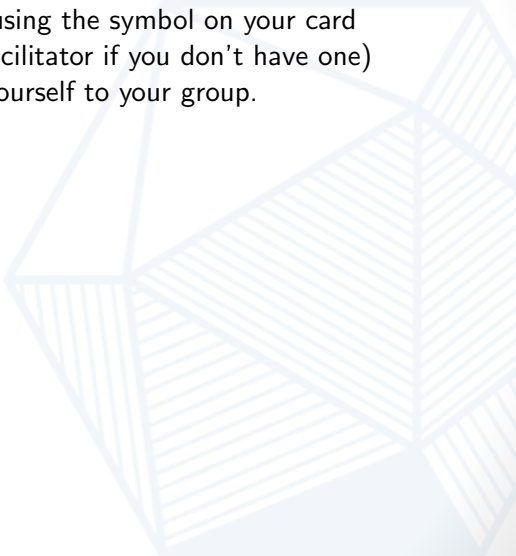
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Adapted from Glenn Singleton's *Courageous Conversations About Race*.
See online for this and other related references.

Definition of "mathematician"

Please find your group using the symbol on your card
(grab a card from your facilitator if you don't have one)
and introduce yourself to your group.

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and introduce yourself to your group.

**Then, list the first few things that come to mind
when you hear the word "mathematician."**

Have the person holding the card with the number "1"
take notes on their card if possible.

Definitions influence... everything

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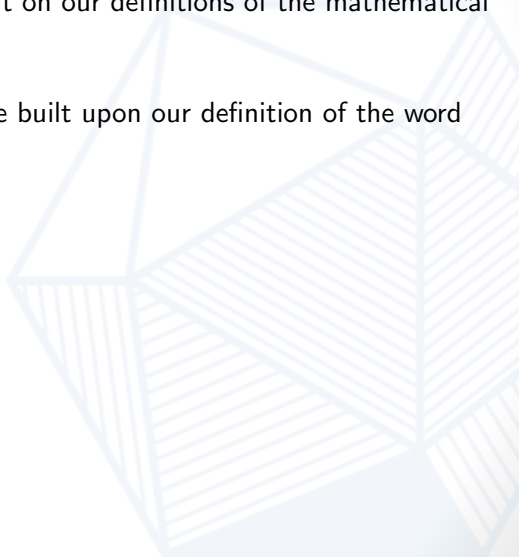
Definitions influence... everything

Our mathematical theories are built on our definitions of the mathematical objects we want to study.

Our mathematical communities are built upon our definition of the word "mathematician."

Get in your groups again and find a few ways in which the words you listed in the previous activity influence our mathematical community.

Have the person holding the card with the number "2" take notes on their card if possible.

Effects on our mathematical community

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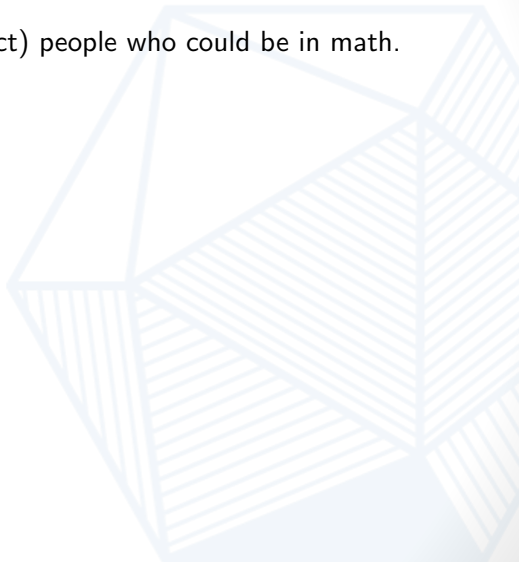
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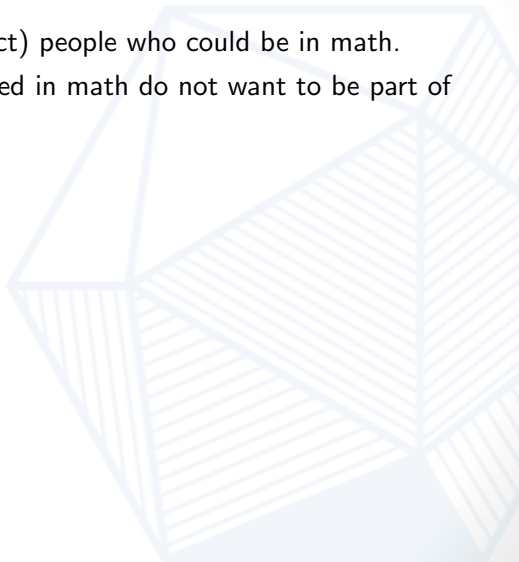- We are losing people who come in math and decide to leave.

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- Some people stick to math but are not comfortable, not as successful as they could be, not supported, etc.
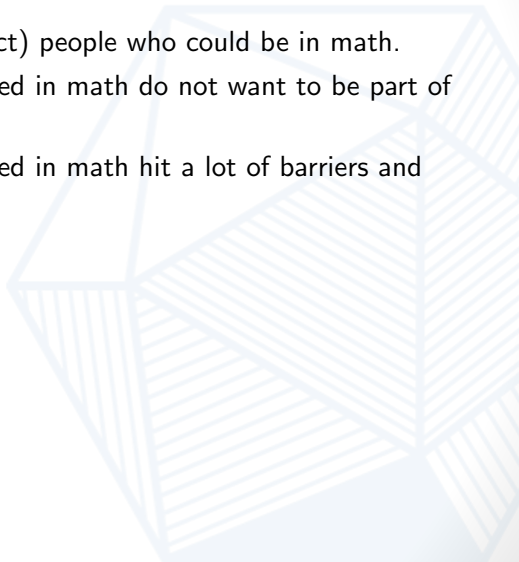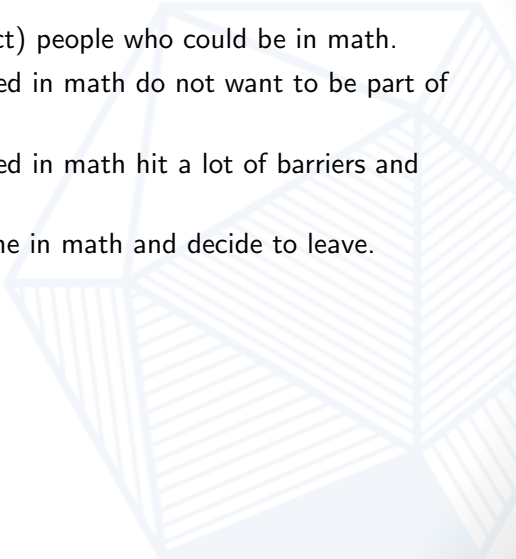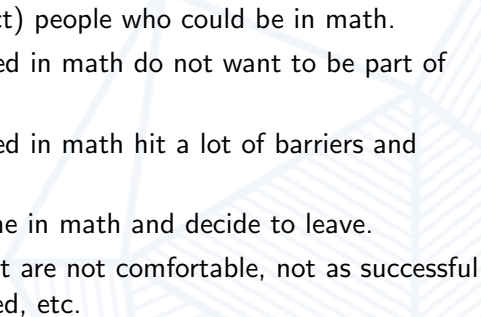
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And who are we losing more specifically?

Who is leaving (or not even entering) the community

The following slide shows, per identity group, the percentage of scientists and engineers working in science and engineering (S&E) in the US that are part of each group. This is next to the percentage of each identity goup in the US population. *We have removed the names of the groups.*

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Data from the 2015 NSF report *Women, Minorities, and Persons with Disabilities in Science and Engineering* and the US Census Bureau. *Hispanic* may be any race. *Other* includes American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and multiple race. Gathering and comparing data on people with disabilities is difficult. No data was available on people with a gender other than man or woman, or by sexual orientation.

Who is leaving (or not even entering) the community

Scientists and engineers working in science and engineering (S&E).

Identity	Percent in S&E	Percent of US population
	49%	38%
	18%	39%
	14%	3%
	7%	3%
	3%	7%
	2%	7%
	4%	9%
	2%	9%
	1%	3%
	1%	3%

Who is leaving (or not even entering) the community

Scientists and engineers working in science and engineering (S&E).

Identity	Percent in S&E	Percent of US population
White men	49%	38%
White women	18%	39%
Asian men	14%	3%
Asian women	7%	3%
Black men	3%	7%
Black women	2%	7%
Hispanic men	4%	9%
Hispanic women	2%	9%
Other men	1%	3%
Other women	1%	3%

This even affects how children think of mathematicians
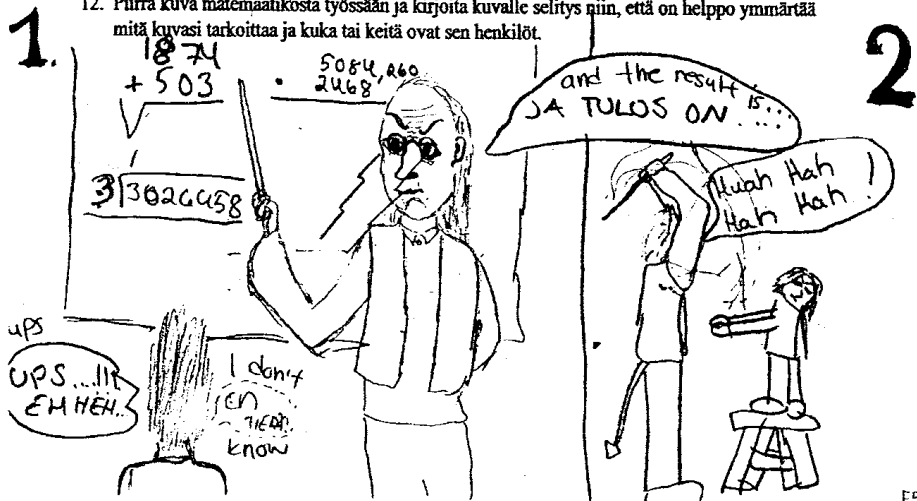
Susan Picker, John Berry: *Investigating pupils' images of mathematicians*.

Alternate definitions? Alternate communities?

If there are some things we want to change about our mathematical communities, we need to start at the root: our definition of "mathematician."

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What could be a new definition of "mathematician"?
What would you like to first come to mind when you hear the word "mathematician"?

Have the person holding the card with the number "3" take notes on their card if possible.

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From the Cambridge Dictionary: "someone who studies, teaches, or is an expert in mathematics."

How to be a
MATH PERSON:

Step 1:
Do math
(any type)

Step 2:
Be a person

scaffoldedmath.com

More on definitions

We have two contending definitions of a mathematician:

- The "official" definition: the definition anyone would give if asked (from question / index card #3: someone who does math).
- The "operational" definition: the definition we use on a daily basis without thinking about it (from question / index card #1).

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As a team, answer the following. Have the person holding the card with number "4" take notes.
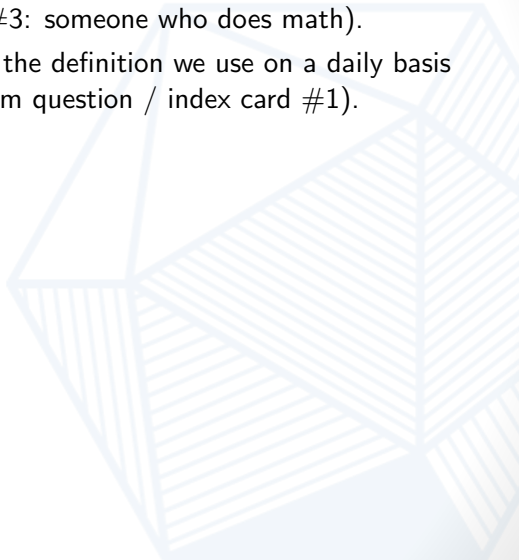
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**What causes this difference between our
"official" definition of a mathematician, and our
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Causes of our differing definitions

- Biases and stereotypes about mathematicians: who they are, what their work is like, what it "takes" to be a math person, etc.

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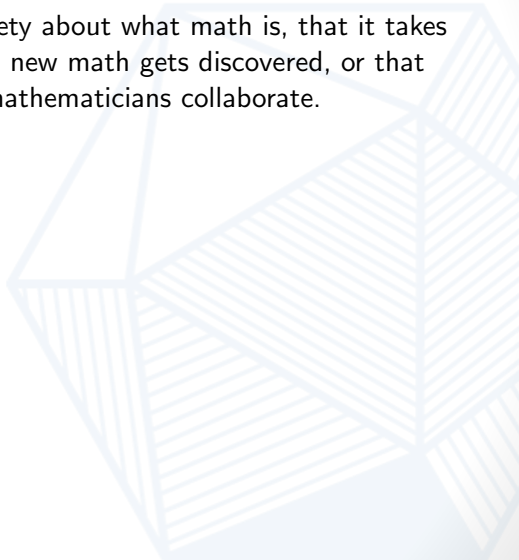
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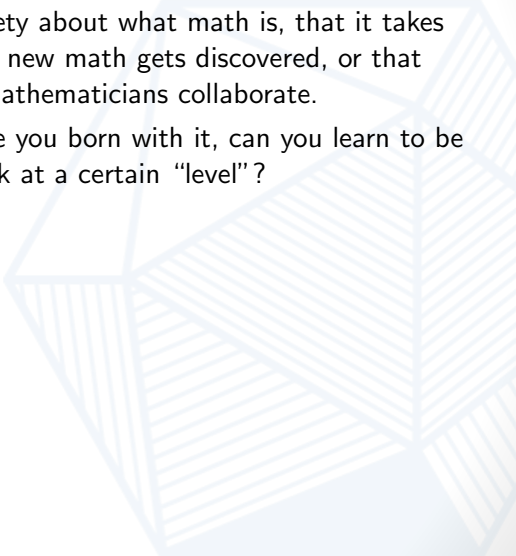- Lack of understanding in society about what math is, that it takes creativity for example, or that new math gets discovered, or that math can be useful, or that mathematicians collaborate.
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Where does this all come from?

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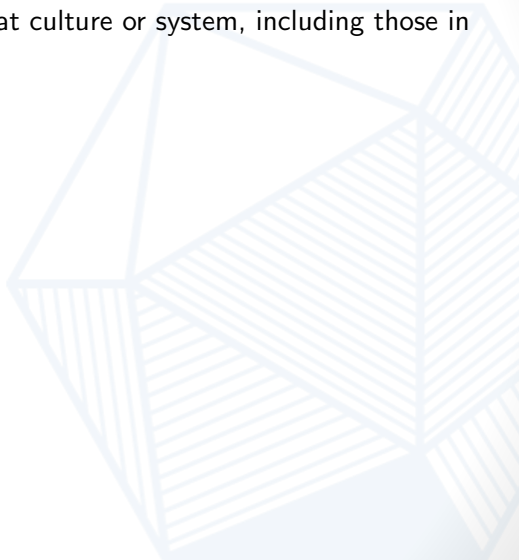
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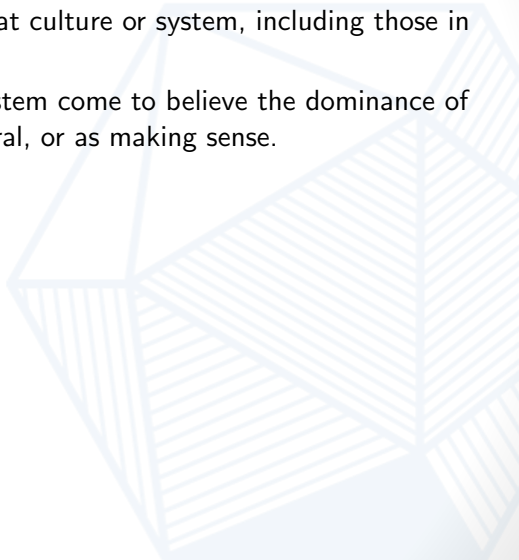
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For the next webinars, we will focus on the *interpersonal* aspect of oppression in mathematics. That's when someone poses a direct act towards someone else, and that act is oppressive (whether the person intended or not for the action to be oppressive).

Recap

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Take a quiet minute or two to yourself to think about this:

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We will encounter again the other levels of oppression (ideological, institutional, internalized): they all interact and reinforce each other. Your assignment is on that topic.

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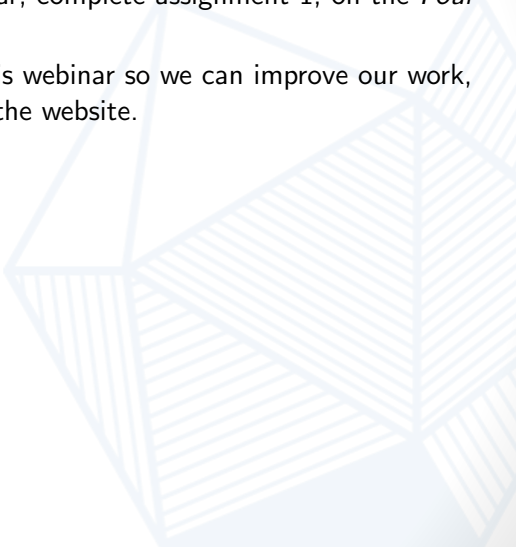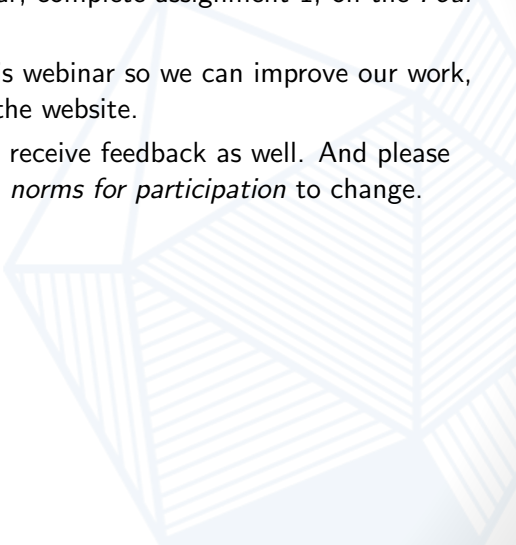- To prepare for the next webinar, complete assignment 1, on the *Four I's of Oppression*.
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Rachel Levy, Kiera Edwards, Grace Murrin!

Thanks for participating!