- Hi! My name is Qin (pronounced 'Chin').
- Email: qin.deng@mail.utoronto.ca
- Office hours: WF 4 5 on the lecture Zoom link
- Website for lecture slides: http://www.math.toronto.edu/dengqin
- Everything else will be posted on Quercus.
- Homework: Enrol in a tutorial &

Watch videos 7 - 15 on Playlist 1

• **Problem set 1** has been posted under Modules: Problem Sets. It is due on Wednesday May 13th at noon on Gradescope.

Some Propaganda Part 1: Go to your tutorials!



Some Propaganda Part 2: Do your homework!



- This class is in inverted format. It's critical that you watch the assigned videos before coming to class.
- We focus on understanding not memorization.
- This is a calculus class. But first and foremost, this is a logic and critical thinking class.
- This is going to be a tough course for many of you. Be prepared to work hard and build habits!
- On't be afraid to ask questions or be wrong in class. I'm not here to judge you.

- (2,4] ∪ (3,5]
 (-∞,4] ∩ [3,∞)
- 4,2)
- (0,0)
- **9** [0, 0]

•
$$\{x \in \mathbb{N} : x^2 < 6\}$$

• $\{x \in \mathbb{Z} : x^2 < 6\}$
• $\{x \in \mathbb{R} : x^2 < 6\}$

•
$$\{x \in \mathbb{R} : \forall y \in [0, 1], x < y\}$$

• $\{x \in \mathbb{R} : \exists y \in [0, 1] \text{ s.t. } x < y\}$
• $\{x \in [0, 1] : \forall y \in [0, 1], x < y\}$
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• $\{x \in [0, 1] : \exists y \in \mathbb{R} \text{ s.t. } x < y\}$

Given two sets A and B. We define

 $A \setminus B := \{x \in A : x \notin B\}$. This set is called "A minus B".

- [0,1]\(-0.5,1)
- \circ $[0,1] \setminus (1,\infty)$
- $\mathbb{R} \setminus [0,1]$
- $[0,1] \setminus \mathbb{R}$

- A := {Students currently in Ontario}
- $B := \{$ Students who like cats more than dogs $\}$
- C := {Students who like math}

Are you in $(A \setminus B) \cup (B \setminus A)$?

- A := {Students currently in Ontario}
- $B := \{$ Students who like cats more than dogs $\}$
- C := {Students who like math}

Are you in $C \setminus (B \setminus C)$?

Let S be the set of even integers. Which of the following is the correct set-building notation for S?

$$\{ x \in \mathbb{Z} : \forall n \in \mathbb{Z}, x = 2n \}$$

$$\{ x \in \mathbb{Z} : \exists n \in \mathbb{Z} \text{ s.t. } x = 2n \}$$

Here are somethings you can do if you are not sure:

- Try saying the set-building notation in English. (ex. it's the set of all integers x s.t. ...)
- Output: Check if 2 is in each of the sets.

Let S be the set of rational numbers. Write S in set-building notation.

- The negation of a logic statement is a statement which is false in every scenario where the original is true and true in every scenario where the original is false.
- What is the negation of the statement "every student attending this Zoom meeting is wearing red"?

Negate the following statements.

- Every math student at UofT has a cellphone.
- There is a country in the European Union with fewer than 1000 inhabitants.
- I like math and physics.
- Everyone in this class likes math and physics .

Negation example

Negate "Every page in this book contains at least one word whose first and last letters both come alphabetically before M".

Hint: Try re-writing this sentence with a clause for each quantifier. For example, re-write this sentence starting with "For every page in this book, ... ". After you do this, negate systematically.