# Math 2710

Aug 26-28

# Course Info

# Key links

- Syllabus
- Tests
- Homework
- Piazza

# Grading

- Two midterms (25 points) tentatively Sep 30 and Nov 5.
  - Notify me by Sep 20 if you need an alternate date for the first exam because of Rosh Hashanah.
- Final Exam (40 points)
- Homework (8 points)
- Piazza participation (2 points)

# Homework

- daily assignments
- periodically collected and graded with short lead time
- assorted short quizzes or other assignments from time to time

# What is this course about?

# Mathematics as a discipline

This course is about

- *how mathematics is done*
- *how mathematics is communicated*.

The actual mathematics we will learn in this course is less important than the approach

# A very simple example

**Assertion:** The sum of two even numbers is an even number.

Question: why is this true?

# Mathematical Proof

A *mathematical proof* of this assertion is an argument that starts from known facts and definitions and establishes the the truth of the assertion using the tools of logic.

A good mathematical proof is

- *rigorous*, meaning it gives a complete logical argument,
- *informative*, meaning that it provides enough information to explain why the assertion is true
- *efficient*, meaning that it is as short as possible while still being rigorous and informative.

# Example, continued

To construct a proof of this assertion, we need:

- to know exactly what the terms mean (what is an even integer?)
- to establish in our own minds that the assertion IS true, and figure out why
- communicate our understanding of why the assertion is true rigorously and efficiently.

# Discussion

- Define *even number*.
- Explain why the assertion about even numbers is true, as rigorously and efficiently as you can.

# Key Vocabulary

theorem, lemma, proposition, corollary, example, algorithm, definition, proof, statement, proposition, converse, contrapositive, conditional statement