

Course Outline

Part 1: How to speak math

- Words = Sets
- Sentences = Statements + predicates
- Essays = Proofs

Part 2: Applications

- Functions
- Counting
- Graphs

Interleaved
Lectures

Q: When I use a computer/phone in class, it contributes to my learning in that class

A. Most of the time

B. Some of the time

C. I really just use it to check Instagram + e-mail

D. I don't use a computer/phone in class.

Motivating Proofs

Q: When you write a program, how do you tell if it works correctly?

Motivating Proofs

Q: When you write a program, how do you tell if it works correctly?

- Try examples
- Trace variable values
- Use debugging tools
- Think logically
- See if got an "A"

Better approach: Proof: formal method of arguing a statement is true

↑
"My program outputs correct value"

Different proof techniques use to show different algorithms are correct.

Recursive Algorithms \longleftrightarrow Proof by Induction