

Math 3342

Theory of Computation

Write something interesting about yourself.

The idea of a computer

Around beginning of 20th century, people were thinking about algorithms:

A formal process for answering a question where all steps are described specifically and will succeed after finitely many steps.

This is not a mathematical definition of an algorithm.

Big question ~ beginning of 20th century

Can we find the ^{integer} solutions to any polynomial with integer coefficients?

"Diophantine equations problem"

This requires a real definition of "algorithm"

Turing (1912 - 1954)

An algorithm is any computation which can in theory be performed by a machine

Turing described mathematically the exact capabilities of the machine to be used.

He called it the Universal Machine

We will discuss:

What kinds of things can a TM compute? (not everything)

Deep!

If the human mind is "only" a physical object, we have the same limitations as any computing machine.