Discrete Mathematics

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Preface

Mathematics possesses not only truth, but supreme beauty,a beauty cold and austere, like that of a sculpture, and capable of stern perfection, such as only great art can show.
–Bertrand Russell

Contents

1

Proofs

What is a proof?   A proof is a method for ascertaining the truth.

- Experimentation and Observation
- Sampling and counter-examples
- Judge, jury
- Word of god(religion)
- Word of your boss, or a client.
- The professor.
- Inner Conviction.
- I don't see why not.

What is a mathematical proof?   A mathematical proof is a verification of a set of propositions by a chain of logical deductions from a set of axioms.

Def.   A preposition is a statement that is either true or false.
ex. $2 + 3 = 5$
ex. $\forall n \in \mathbb{N}, n^2 + n + 41$ is a prime number

Predicate   in the above case is ($n^2 + n + 41$ is a prime number). The predicate is a proposition whose truth depends on the value of variable(s).