Some notes from class

2018-01-10



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Review

Definition

An axiomatic system is **consistent** if it is impossible to deduce from the axioms a theorem that contradicts any axiom or any theorem already proved from the axioms.

Definition

An axiom is **independent** of the other axioms in a system if it cannot be deduced as a consequence of the other axioms. A set of axioms is **independent** if each axiom in the system is independent of the others.

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Undefined terms: blip, trek Do those words apply here?

$\underline{\text{Axioms}}$:

- There are exactly five blips.
- 2 Every trek contains exactly two blips.
- Second Every blip belongs to at most two treks.

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Completeness

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An axiomatic system is **complete** if it is impossible to add any additional axiom that is independent of and consistent with the given axioms.

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Basically: The axiomatic system is sufficiently informative that we are able to answer all questions about any object satisfying these axioms.

<u>Undefined terms</u>: blip, trek <u>Not complete</u>. Why? Axioms:

- There are exactly five blips.
- 2 Every trek contains exactly two blips.
- **3** Every blip belongs to at most two treks.

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A little reminder about logic

Theorem

Let x and y be integers. Then x and y have the same parity if and only if x + y is even.

How would we structure a proof of this?

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