Lecture 5 (3.1)

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September 28, 2018

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3.1 Proving universally quantified statements **1**

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$\forall x \in \mathbb{Z}, P(x)$

Choose a representative x of S...
"Let x be an arbitrary element of S"
"Let $x \in S$"..."

Remember, examples prove nothing!

Do not assume what you want to prove

Tips:
- For inequalities, case by case analysis is a good technique.
- Direct proof can be hard, write down what we know already, plus axioms and other known facts like trig identities.
- Don't include "discovery" part in proof
- It could be beneficial to write out several different equations to use throughout the proof, labeled with (1), (2), (3)... etc.