

# Introduction

Readings

Admin

Course content intro

Proofs

Sequences

## Readings

# Readings

- ▶ Read Chapter 1
- ▶ Appendix A:
  - ▶ A.1 is covered below
  - ▶ verify that you know the material in A.2-A.5
- ▶ Some lecture material is not covered in Appendix A
  - ▶ proof strategy
  - ▶ convergence of sequences

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# Slides

... are empty. I will update them for 2017.

Note to self:

- ▶ notes are in onenote
- ▶ plus some handwritten notes

## Course content intro

## Crop yield example

...



# Proofs

# Proofs

In this course, you will see and do mathematical proofs. Now, I will show you what a proof is, and how I expect your proofs to look like. To practice proofs, we will look at two simple examples, using natural and real numbers.

# Natural numbers

A natural number. . .

# Real numbers

A real number. . .

## Proof format

In this class, we will be looking at *for all* proofs:

*For each  $x \in U_x : P(x)$*

For example



# Sequences

# Summation



# Convergence

- ▶ Additional information  
[@KhanAc](<https://www.khanacademy.org/math/calculus-home/series-calc/seq-conv-diverg-calc/v/proving-a-sequence-converges>), especially video 5.

## Real numbers (cont'd)

- ▶ slides on limits, with pictures
- ▶ Add triangle inequality and absolute value, norms, etc (for proof of  $a_n + b_n \rightarrow a + b$ )
- ▶ i.e. metric spaces version (see also MIT Courseware)