

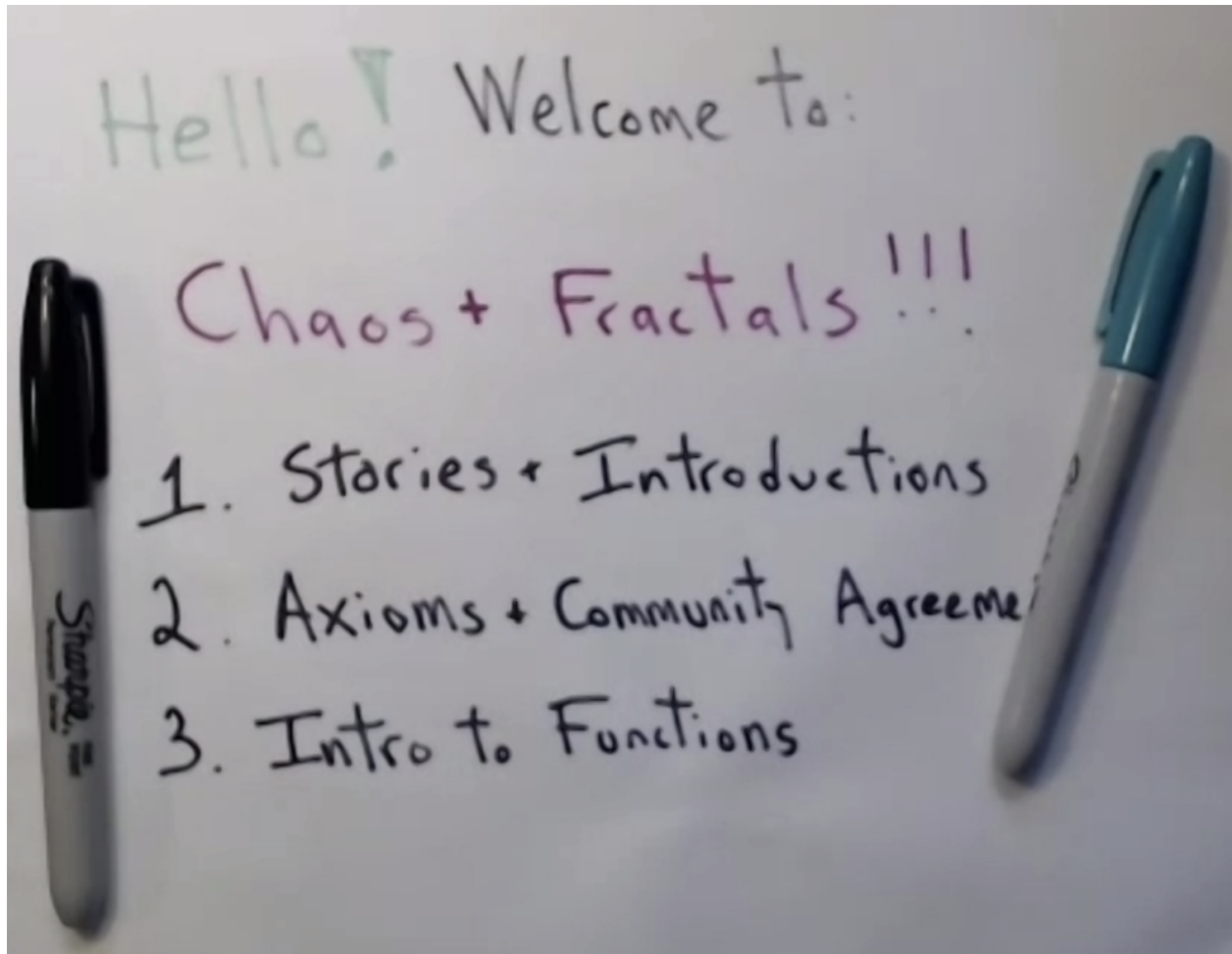
# Week 1 class 1 - Chaos and Fractals

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## Chaos and Fractals

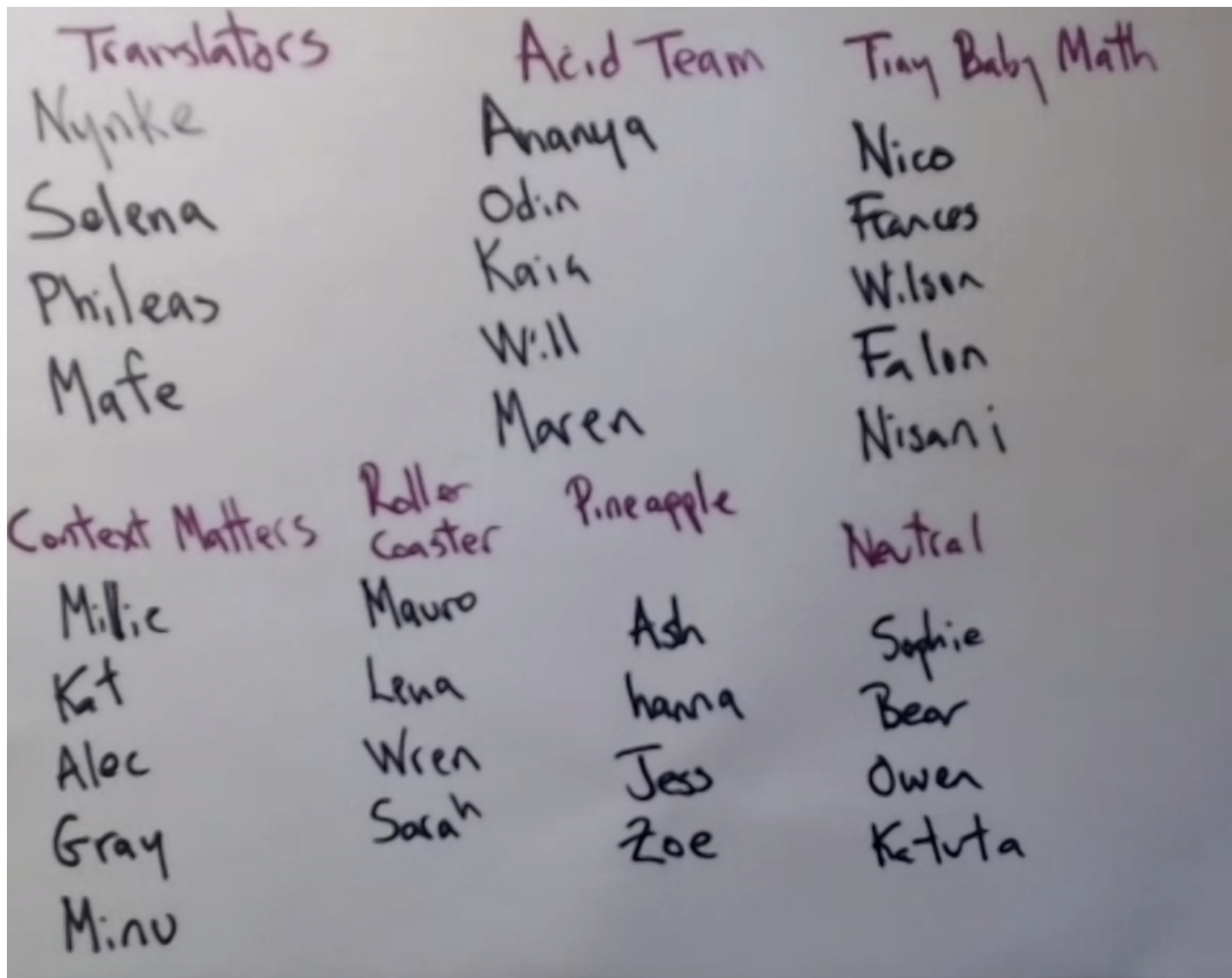
Today: - Introductions (to the course and each other) and stories about ourselves, icebreakers -  
Axioms for the class + community agreements - Intro to functions



Our stories were all about different approaches to mathematics through languages and signs, so we decided to name our group “the translators”.

## Intros to each other

- share an experience of math agony or ecstasy
- find intersections between your stories in small groups
- find a group name for yourselves based on these intersections



## Intro to the course

The course is addressed to folks from many different math levels, backgrounds, and experiences. Mathematics proceeds from axioms. Let's look at a couple of axioms that apply to teaching:

In mathematics, axioms are propositions that are assumed to be true. The mathematician [Federico Ardila-Mantilla](#) has written four axioms that guide the work he does in education and outreach. Federico's axioms resonate strongly with me. They are:

- 1. Mathematical potential is distributed equally among different groups, irrespective of geographic, demographic, and economic boundaries.**
- 2. Everyone can have joyful, meaningful, and empowering mathematical experiences.**
- 3. Mathematics is a powerful, malleable tool that can be shaped and used differently by various communities to serve their needs.**
- 4. Every student deserves to be treated with dignity and respect.**

Taking the above axioms as a starting point, let's think about what type of community we want to create this term. Here is a community agreement written by Federico Ardila-Mantilla for his Combinatorics class at San Francisco State University.

This course aims to offer a joyful, meaningful, and empowering experience to every participant; we will build that rich experience together by devoting our strongest available effort to the class. You will be challenged and supported. Please be prepared to take an active, critical, patient, and generous role in your own learning and that of your classmates.

Discuss the following in your groups:

1. Choose one or two words in the above agreement that resonate with you. Your group does not all have to choose the same words! Discuss why they resonate.
2. Are there any changes to this agreement that we should consider.

Spend around 10-15 minutes in discussion. We'll then come back together and groups will have an opportunity to share thoughts.

Course goals:

- Stay physically and mentally healthy and maintain intellectual and personal connection during

a potentially difficult time.

- I want you to gain a solid understanding of the basic mathematical ideas behind chaos and fractals. As part of this, I hope you'll leave this course thinking somewhat differently about order and disorder, simplicity and complexity.
- I want to help you improve your basic facility with algebra and functions, your problem solving skills, your ability to create and interpret different types of graphs, and your overall mathematical confidence.
- I want you to gain a sense of how math and physics is done, and gain an awareness that these are not static, “dead” disciplines. I want you to gain a greater understanding of science as an institution and science as a culture, and how science intersects and influences other creative and scholarly areas.
- Have fun while growing and learning.

## **Intro to functions**

(next class)