Math 167: Game Theory

UCLA

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Hello and welcome! As the title suggests, these are my lecture notes on Game Theory. Our professor is **Sylvester Zhang**. The textbook that we are using is **Game Theory, Alive by Anna R. Karlin and Yuval Peres**.

The goal of these lecture notes is to write **understandable** math. Some dude said, "If you can't explain it to a six year old, then you don't understand it yourself". The hope is that anyone coming across these notes (like you!) will be able to at least take away the gist of these concepts. Email me at darsh [at] ucla [dot] edu if you find any errors!

Huge shoutout to https://zitong.me/notes/rings-notes.pdf who inspired me to attend class and lock in.

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1 Lecture 1: Jan 5

1.1 Introduction

Today, the professor arrived 20 minutes late so we just did a brief intro on things we're gonna do in the class like combinatorial games, two-person zero sum games, general sum games, Nash equilibria, fixed-point theorem, and evolutionary models.

Apparently, the fixed point theorem is used to prove something related to the Nash equilibria. Interestingly enough, Zitong sent me this reel a few days ago where I first learned about the fixed point theorem.

We ended lecture by playing the classic 4×5 version of Chomp! It seems to me that the first player always has a winning strategy but I need to formalize why this is true.