M1C03 Lecture 14

The Principle of Mathematical Induction

Jeremy Lane

Oct 18, 2021

Announcement(s)

1. Quiz 5 and Assignment 2 are due Friday.
2. Test 1 details are on Avenue.

Overview

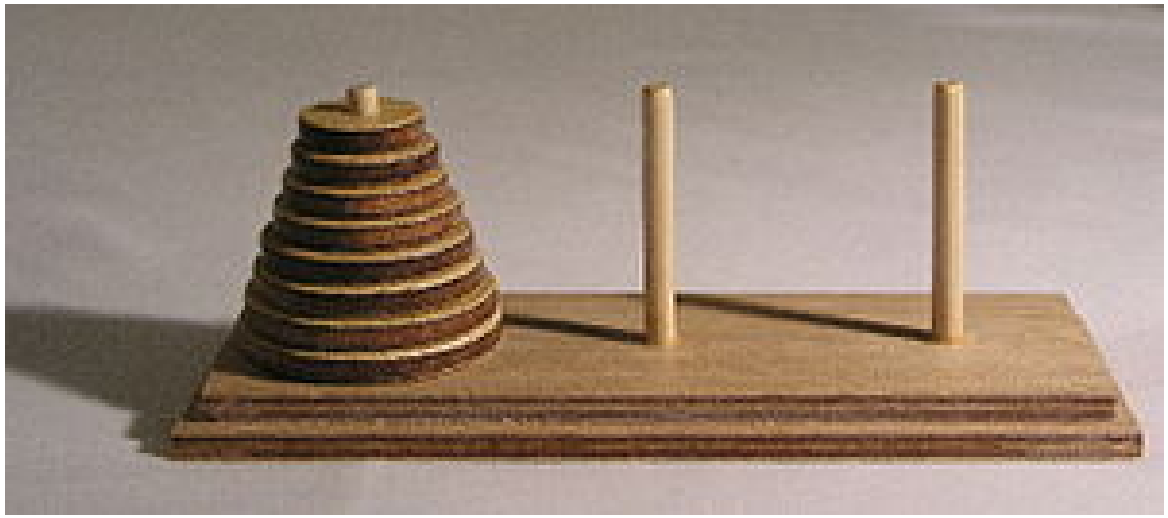
The goal is to introduce *The Principle of Mathematical Induction* (sometimes called *induction*, but unrelated to inductive reasoning).

In my experience, when I try to explain induction, students find it confusing.

Instead of me explaining, I want you to discover it yourselves.

To help, we will play a game.

A game



Goal: Move the stack to the third peg.

Rules:

1. You can only move one piece at a time (by taking it from the top of a stack and putting it on another peg).

2. You cannot put a piece on top of a smaller piece.

Questions: Is it always possible to win? If so, what is the least number of moves required?

Strategy: try examples

Number of pieces	Possible to win?	Least number of moves

Strategy: look for patterns

Strategy: make conjectures

Find a proof