Agenda for Tuesday, March 26, 2024


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# Reminders

- ! Homework 0 due Thursday 11:59 PM
- Make sure you're free on exam dates

# Introductions


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# Syllabus

The syllabus can be found in Canvas at the following link:
`https://canvas.northwestern.edu/courses/210072/assignments/syllabus`

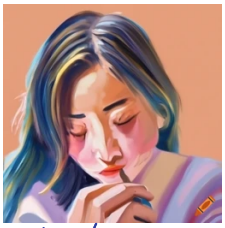
Important things to note

- Grading - HW and exam problems graded out of 5
  Only 0, 4, 5 are possible
- Leniency - 1 written HW can be late, no questions asked. Just upload as usual
- LaTeX - Written HW must be typed using LaTeX.
- Exam dates - Apr 23 , May 21
  in discussion
- Discussions - Optional but useful because
  1.) feedback
  2.) some of the problems will be exam problems

# What to expect

Highly social class time

A lot of feedback from instructor, TA, and peers



Some reading / videos on your own

# Diving in with proofs

**Example 1.** Discuss what might be a good definitions for an even number and an odd number.

An integer $n$ is even if it can be written in the form $n = 2k$ for some integer $k$. An integer $n$ is odd if it can be written in the form $n = 2k + 1$ for some integer $k$.

**Example 2.** Prove or disprove the following statement: If $n$ is an even integer, then $n^2$ is an even integer.

Since $n$ is even, it can be written in the form $n = 2k$ for some integer $k$. Then $n^2 = (2k)^2 = 4k^2 = 2(2k^2)$. Therefore $n^2$ is also even because it can be written as twice the integer $2k^2$.

**Example 3.** Prove or disprove the following statement: The sum of two consecutive integers is odd.

Let $n$ and $n + 1$ be two consecutive integers. Then their sum is

$$n + (n + 1) = 2n + 1.$$

Since their sum can be written in the form $2n + 1$ for an integer $n$, we know their sum is odd.

**Example 4.** Prove or disprove the following statement: The product of an odd integer and an even integer is odd.

This statement is false. A suitable counterexample is $7 \cdot 6 = 42$, which is even.