# Week 1

General information about the Putnam exam:
- Date: 12/6/2025. We can decide a time to start (maybe 9 AM and 2 PM).
- 2 sessions: 3 hours in the morning and 3 hours in the afternoon. Each session consists of 6 problems.
- Closed note, closed book, no calculator

Tentative stream of topics:
- Sequence: 3 weeks
- Number theory: 3 weeks
- Polynomials: 2 weeks
- Games and invariance principle: 2 weeks
- Enumerative combinatorics: 3 weeks

To warm up, do the following calculations by hand:

$5424 + 73463$

$5424 - 73463$

$100 \times 345$

$245 \times 321$

$737 \div 36$

$2.34 \times 53.2$

$3 \times 2^{2^3}$

Which number is bigger?

$\sqrt{3}$ vs 2

$\frac{43}{44}$ vs $\frac{34}{35}$

$1 \cdot 3 \cdot 5 \cdot 7 \cdot \ldots \cdot 51$  vs  $2 \cdot 4 \cdot 6 \cdot \ldots \cdot 50$  vs  $2 \cdot 4 \cdot 6 \cdot \ldots \cdot 52$

**Assignment:**
Compute $(225 - 1^2)(225 - 2^2) \ldots (225 - 20^2)$