HW1

- Reading assignment: pp. 1-30, Honors students also need to read Appendix to Chapter I.
- Pages 21–23: 4,5,6.
- Solve equation $z^{101} = i + 1$ over $\mathbb{C}$.
- Simplify expression (try using complex numbers)

$$\sum_{j=0}^{n} \cos(jx)\,, \quad x \in \mathbb{R}\,.$$

- Is it true that $[0, 1) \sim \mathbb{R}$?
- Let S be the set of infinite sequences $(\delta_1, \delta_2, \ldots)$ where $\delta_j \in \{0, 1\}, \forall j$. Is it true that $S \sim \mathbb{R}$?
- (For students not taking the class with honors) Is it true that $\mathbb{R}^2 \sim \mathbb{R}$?
- (For students taking the class with honors) Let S' be the set of infinite sequences $(\delta_1, \delta_2, \ldots)$ where $\delta_j \in \mathbb{R}, \forall j$. Is it true that $S' \sim \mathbb{R}$?

Remark: you are free to use Bernstein-Schroder theorem we proved in class.