Warm-up: Number 6 in Exercises 1.1

Let $\mathbb{N}$ be the set of all positive integers. Prove that each of the following collections of subsets of $\mathbb{N}$ is a topology.

(i) τ_1 consists of $\mathbb{N}$, $\varnothing$, and every set $\{1, 2, \ldots, n\}$, for n any positive integer.
(This is called the *initial segment topology*.)

(ii) τ_2 consists of $\mathbb{N}$, $\varnothing$, and every set $\{n, n+1, \ldots\}$, for n any positive integer.
(This is called the *final segment topology*.)

Assignment due next class

- Read section 1.3 in the textbook.
- Write solutions to number 1 in Exercises 1.3.