# Warm-up on the Euclidean topology

When $\mathbb{R}$ is equipped with the Euclidean topology, are the following subsets open? closed? neither? both?

1. the interval $(0, 1)$: open, not closed
2. the interval $[0, 1)$: neither open nor closed
3. the unbounded interval $[0, \infty)$: closed, not open
4. the singleton set $\{\pi\}$: closed, not open; $\mathbb{R}$ is a $T_1$ space
5. the natural numbers $\mathbb{N}$: closed, not open
6. the rational numbers $\mathbb{Q}$: neither open nor closed

# Assignment due next class

- Read section 2.2 in the textbook (about the concept of a basis for a topology).
- Write a solution to number 7 in Exercises 2.1.