## 0.1 Topologies

## 0.2 Topologies on sets

$T$ is a topology on set $X$ if:

- $X \in T$
- $\varnothing \in T$
- Unions of $T$ are in $T$
- Intersections of $T$ are in $T$

## 0.3 Examples of topologies: The trivial topology

The trivial topology contains only the underlying set and the empty set.

## 0.4 Examples of topologies: The discrete toplogy

The discrete toplogy contains all subsets of the underlying set (is this the power set?)