

Definition 8.0.3. *[OG6] A topology $\tau \subseteq \mathcal{P}(X)$ is a family of subsets of X that are called **open sets**. This family enjoys three properties: \emptyset, X are open; the intersection of a finite number of open sets is an open sets; the union of an arbitrary number of open sets is an open set.*

*A set A is **closed** if A^c is open.*