Proposition 1. *Any finite union of closed sets is closed, and any arbitrary intersection of closed sets is closed.*

Proof. proposition 1
$X \in \tau$
If $U \subseteq X \wedge X \backslash U \in \tau$ then $X \backslash \bigcap U \in \tau$
If $U, V \subseteq X \wedge X \backslash U \in \tau \wedge X \backslash V \in \tau$ then $X \backslash U \cup V \in \tau$ $\square$