Definition MunkTop.17.1: If $A \subseteq X$ then A is a *closed set* in $(X, \mathscr{T})$ if and only if $(X, \mathscr{T})$ is a topological space and $X \setminus A$ is open in $(X, \mathscr{T})$.

Definition MunkTop.17.2: If $(X, \mathscr{T})$ is a topological space and $A \subseteq X$ then $A^\circ = \cup\{U \in \mathscr{T} : U \subseteq A\}$.

Definition MunkTop.17.3: If $(X, \mathscr{T})$ is a topological space and $A \subseteq X$ then $\overline{A}$ is the intersection over the set of F such that $A \subseteq F$ and F is a closed set in $(X, \mathscr{T})$.

Definition MunkTop.17.4: $A \cap B \neq \varnothing$ if and only if $A \cap B \neq \varnothing$.

Definition MunkTop.17.4.5: $A \cap B = \varnothing$ if and only if $A \cap B = \varnothing$.

Definition MunkTop.17.5: If $(X, \mathscr{T})$ is a topological space and $x \in X$ and $U \in \mathscr{T}$ then U is a *neighborhood* of x in $(X, \mathscr{T})$ if and only if $x \in U$.

Definition MunkTop.17.6: If $(X, \mathscr{T})$ is a topological space and $x \in X$ and $A \subseteq X$ then x is a *limit point* of A in $(X, \mathscr{T})$ if and only if for every U, if U is a neighborhood of x in $(X, \mathscr{T})$ then $U \cap A \setminus \{x\} \neq \varnothing$.

Definition MunkTop.17.7: If $(X, \mathscr{T})$ is a topological space and f is in the set of maps from $\mathbb{N}$ to X and $x \in X$ then f *converges to* x under $\mathscr{T}$ if and only if for every $U \in \mathscr{T}$, if U is a neighborhood of x in $(X, \mathscr{T})$ then there exists $N \in \mathbb{N}$ such that for every $n > N$, $f(n) \in U$.

Definition MunkTop.17.8: If $(X, \mathscr{T})$ is a topological space then $(X, \mathscr{T})$ is a *Hausdorff space* if and only if for every x, $y \in X$, if $x \neq y$ then there exist U, $V \in \mathscr{T}$ such that $x \in U$ and $y \in V$ and $U \cap V = \varnothing$.

Definition MunkTop.17.9: If $(X, \mathscr{T})$ is a Hausdorff space and there exists y such that f converges to y under $\mathscr{T}$ then x is a *limit* of f if and only if x equals the unique y such that f converges to y under $\mathscr{T}$.