[] *Interior of a subset of* $\mathbb{X}$: Given any $S \subseteq X$, the interior of S in $\mathbb{X}$ is

- the largest open set $In_X(S)$ such that
- $In_X(S) \subseteq S$.

[] *Boundary of a subset of* $\mathbb{X}$: Given any $S \subseteq X$, the boundary of S in $\mathbb{X}$ is

- $Cl_X(S) - In_X(S)$.

[] *Convergent sequence in* $\mathbb{X}$: A sequence $\{x^m\} \in X^\infty$ converges to $x^* \in \mathbb{X}$ if

- for each $\epsilon > 0$
- $\exists$ a real number $M(\epsilon)$ such that
- $d(x^m, x^*) < \epsilon$
- $\forall m \geq M(\epsilon)$.

[] *Closed subset of* $\mathbb{X}$: A subset S is closed in $\mathbb{X}$ if, and only if,

- any sequence all of whose terms are in S
- converges to a point in S, if it converges at all.

[] *Bounded subset of* $\mathbb{X}$: A subset S is bounded in $\mathbb{X}$ if

- $\exists\ \epsilon > 0$ such that
- $S \subseteq N_{\epsilon,X}(x)$
- for some $x \in S$.

[] *Connected subset of* $\mathbb{X}$: A subset S is connected in $\mathbb{X}$ iff

- S can not be written as $S \equiv S_1 \cup S_2$
- where $S_1 \cap S_2 = \emptyset$
- and S_1, S_2 are open in S.

[] *Connected Metric Space* $\mathbb{X}$: $\mathbb{X}$ is connected iff the only clopen subsets of $\mathbb{X}$ are $\mathbb{X}$ and $\emptyset$.

[] *Dense subset of* $\mathbb{X}$: A subset Y is said to be dense in $\mathbb{X}$ if

- $Cl_X(Y) = X$.