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1.1 Neighbourhood topology

We have a set X .

For each element $x \in X$, there is a non-empty set of neighbourhoods $N \in \mathbf{N}(x)$ where $x \in N \subseteq X$ such that:

- If N is a subset of M , M is a neighbourhood.
- The intersection of two neighbourhoods of x is a neighbourhood of x .
- N is a neighbourhood for each point in some $M \subseteq N$