order topology

(side note) A simply ordered set M is a set such that
if any two of. its elements are given it is known which one precedes.

Def (basis of order topology).

Say our topo. space has a simple order relation, and more than one element.

Let $\mathcal{B}$ (the basis) be the collection of all sets of the following types:

1. All open intervals (a,b) in X.
2. All intervals of the form $[a_0, b)$ (where a_0 is the minimum of X).
3. All intervals of the form $(a, b_0]$. (where b_0 is the maximum of X).

Def (rays determined by some element of X)

Given an ordered topological space X, and an element $a \in X$, there are 4 subsets based on a, called rays:

- $(a, +\infty)$
- $(-\infty, a)$

] open rays

closed rays [

- $[a, +\infty)$
- $(-\infty, a]$

the open rays form a subbasis for the order topology on X.