limit points of sequences

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Classification	msc 54A05
Defines	limit point of a sequence
Defines	limit point of the sequence
Defines	accumulation point of a sequence
Defines	accumulation point of the sequence

In a topological space X, a point x is a *limit point of the sequence* $x_0, x_1, \ldots$ if, for every open set containing x, there are finitely many indices such that the corresponding elements of the sequence do not belong to the open set.

A point x is an *accumulation point of the sequence $x_0, x_1, \ldots$* if, for every open set containing x, there are infinitely many indices such that the corresponding elements of the sequence belong to the open set.

It is worth noting that the set of limit points of a sequence can differ from the set of limit points of the set of elements of the sequence. Likewise the set of accumulation points of a sequence can differ from the set of accumulation points of the set of elements of the sequence.

Reference: L. A. Steen and J. A. Seebach, Jr. "Counterxamples in Topology" Dover Publishing 1970