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convergent sequence

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Defines	limit point
Defines	limit
Defines	converge
Defines	diverge
Defines	divergent sequence

A sequence  $x_0, x_1, x_2, \dots$  in a metric space  $(X, d)$  is a *convergent sequence* if there exists a point  $x \in X$  such that, for every real number  $\epsilon > 0$ , there exists a natural number  $N$  such that  $d(x, x_n) < \epsilon$  for all  $n > N$ .

The point  $x$ , if it exists, is unique, and is called the *limit point* or *limit* of the sequence. One can also say that the sequence  $x_0, x_1, x_2, \dots$  *converges* to  $x$ .

A sequence is said to be *divergent* if it does not converge.