



### Why

Once we have a notion of distance, we can define a more general notion of convergence.

### Definition

Let  $(X, d)$  be a metric space and let  $(x_n)_{n \in \mathbf{N}}$  be a sequence in  $X$ . A *limit* of  $(x_n)_{n \in \mathbf{N}}$  is an element  $x \in X$  for which  $d(x, x_n) \rightarrow 0$ .



