Course: Real Analysis(Sequences)

Sebastián Caballero

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A simple notes template. Inspired by Tufte-LaTeXclass and beautiful notes by

`https://github.com/abrandenberger/course-notes`

1 *Introduction to Sequences*

Generally, when someone starts to study mathematics and specially set theory, a sequence is defined as a function from $\mathbb{N}$ to a set S. In this case, we defined a sequence as a function to $\mathbb{R}$, and the properties of this sequences will help us in real Analysis further when we start our study on limits and infinite series.

Definition 1.1 (Sequence of real numbers)**.** *Let X be a function from $\mathbb{N}$ to $\mathbb{R}$ is called a* ***sequence of real numbers****, and notations are:*

- *For the sequence X, $f(n)$ is noted as x_n*
- *The sequence X can be written as (x_n), $(x_n : n \in \mathbb{N})$*

The use of parentheses are for emphasize the order induced by the natural numbers, even when a function is just a set of ordered pairs and it gives the property that $\{(x, y), (a, b)\} = \{(a, b), (x, y)\}$.