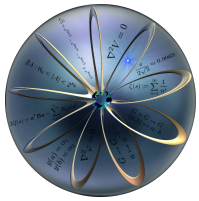

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example of infinite hyperreal number

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The hyperreal number $\{n\}_{n\in\mathbb{N}} \in {}^*\mathbb{R}$ is (or).

Proof : Let $\mathcal{F}$ be the nonprincipal ultrafilter in the `http://planetmath.org/Hyperreal`entry.

Given any positive $a \in \mathbb{R}$ we have that $\{n \in \mathbb{N} : n \leq a\}$ is finite, so $\{n \in \mathbb{N} : a < n\} \in \mathcal{F}$ and therefore $\{a\}_{n\in\mathbb{N}} < \{n\}_{n\in\mathbb{N}}$.

Thus $\{n\}_{n\in\mathbb{N}}$ is infinite.$\square$