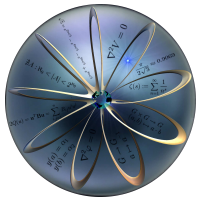

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ordinal number

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An ordinal number is a well ordered set S such that, for every $x \in S$,

$$x = \{z \in S \mid z < x\}$$

(where $<$ is the ordering relation on S).

It follows immediately from the definition that every ordinal is a transitive set. Also note that if $a, b \in S$ then we have $a < b$ if and only if $a \in b$.

There is a theory of ordinal arithmetic which allows construction of various ordinals. For example, all the numbers 0, 1, 2, ... have natural interpretations as ordinals, as does the set of natural numbers (including 0), which in this context is often denoted by ω, and is the first infinite ordinal.