Answer on Question #53050 – Math – Real Analysis

When a number set is not bounded above the supremum is plus infinity and when a set is not bounded below the infimum is minus infinity why?

please explain with examples

Solution

The supremum is the least upper bound of the set so if the set is not bounded above, all upper bounds (including the least) are equal $+\infty$.

For example, $\{\boldsymbol{n}+\frac{\boldsymbol{1}}{\boldsymbol{n}};\boldsymbol{n}\in\boldsymbol{N}\}$**.**

The infimum is the greatest lower bound of the set so if the set is not bounded below, all lower bounds (including the greatest) are equal to $-\infty$.

For example, $\{-\boldsymbol{x}^{\boldsymbol{2}};\ \boldsymbol{x}\in\boldsymbol{R}\}$**.**