1)
$$\begin{cases} 1 + (-1)^n : n \in \mathbb{N} \end{cases}$$
, bounded or not?

Solution: 1. $0 < 3n - 1$
 $0 < n + (-1)^n < 3n - 1$
 $0 < n + (-1)^n < 3n - 1$
 $0 < n + (-1)^n < 3n - 1$
 $0 < n + (-1)^n < 3n - 1$
 $0 < n + (-1)^n < 3n - 1$

Conclusion: the set is bounded

2) $X = \begin{cases} n^2 : n \in \mathbb{N} \end{cases}$ is unbounded

Solution: For $\forall C \in \mathbb{R} \ \exists x \in X \ \text{Such that } 1 \times 1 > C \ \text{where } x = n^2 \ \text{where } n = [1C1] + 1$

Conclusion: the set is unbounded

3) $X = \begin{cases} (-1)^n n \\ n + 1 \end{cases}$ is bounded and find inf X , sup X .

Solution: 1. let's notice that $(-1)^n m < n + 1$, thus, $\forall 1 \times n \in X < 1$

2. $(-1)^n in$ the numerator will change it from negative to positive values depending on $n \Rightarrow -1 < \forall x \in X < 1$

inf

Conclusion: X is a bounded set and inf X , sup X .

Solution: 1. Obviously, we get inf of X when $n \in \mathbb{N}$ is the lowest, $n = 1$
 $X = \begin{cases} x \in X \\ x \in X \end{cases}$ when $x \in \mathbb{N}$ is the lowest, $x \in X \in X$.

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