For full credit please show your work and write all proofs using complete sentences. No wireless devices are permitted.

1. Show that the set $A = \{\frac{1}{n} : n \in \mathbb{N}\}$ is bounded below and that $\inf A = 0$.

   Since $\frac{1}{n} > 0$ for all $n \in \mathbb{N}$, 0 is a lower bound for $A$. Therefore, $A$ is bounded below.

   Let $x > 0$, then $x > \frac{1}{n}$ for some $n \in \mathbb{N}$.

   (Hence, $x > a$ for some $a \in A$.) Therefore, $\inf A = \text{g.l.b. } A = 0$. 