$\cup$

$\mathbb{R} - \mathbb{Q} = \mathbb{Q}^c$

an upper bound of S;
for if y be any number less than G, $\exists$ at least one member g of S which is greater than y.
Thus, G is the least of all the upper bounds of S i.e. $\sup S = G$.

(R.K.) **Illustrations:**

(1) If a real number k is not an upper bound of a set S, then $\exists$ at least one elt $y \in S$ such that $k < y$.

k upper bound नहीं है इसका मतलब कोई इससे बड़ा

(2) If a real number k is not a lower bound of a set S, then $\exists$ at least one element $z \in S$ such that $z < k$.

(3) If a set has one upper bound, then it has an infinite number of upper bounds.

→ Notice that,
If K is an upper bound of a set S, then any number $K_1 (> K)$ is also an upper bound of S.

(4) If a set has one lower bound ~~of a set S~~, then it has an infinite number of lower bounds.

→ Notice that if k is a lower bound of a set S, then any number $k_1 (< k)$ is also a lower bound of S.