Variant of book's ER 2.3.10

Let A and B be nonempty bounded-above subsets of $\mathbb{R}$.

1. Is $A \cup B$ is a nonempty bounded-above subsets of $\mathbb{R}$? Explain (formal proof not necessary).

2. Prove that $\sup(A \cup B) = \sup\{\sup A, \sup B\}$.

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