

Homework 2: Functions, More Supremums (Due 2/12/2024)

*Assignments should be **stapled** and written clearly and legibly.*

1. §2.3, #5(a), (b), 7(b), (c), (e), 8.
2. Suppose that A and B are nonempty bounded sets in \mathbb{R} and that $\sup A < \sup B$. Prove that there exists $b \in B$ that is an upper bound for A . Then show by example that this is not always the case if we only assume $\sup A \leq \sup B$.
3. Let $a < b$ be real numbers and consider the set $T = \mathbb{Q} \cap [a, b]$. Prove that $\sup T = b$. You may use any of the theorems we've proved in class.