Exercises

Exercise 1. Consider a set $A = \{2, 4, 5, 11\}$ ordered by $\leqslant$. Is $\leqslant$ a total order or a partial order on A? What are the minimal/least/maximal/greatest elements? Let $A \subset \mathbb{N}$. What are the bounds?

Exercise 2. Consider a set $A = \{2, 4, 5, 11\}$ ordered by divisibility $\mid$. Is $\mid$ a total order or a partial order on A? What are the minimal/least/maximal/greatest elements? Let $A \subset \mathbb{N}$. What are the bounds?

Exercise 3. Draw the Hasse diagram of the powerset of $\{a, b, c\}$ ordered by inclusion $\subseteq$. Is the relation $\subseteq$ a total order or a partial order on $\{a, b, c\}$?

Exercise 4. Draw the Hasse diagram of the set $A = \{1, 2, 3, 4, 5, 6\} \subset \mathbb{N}$ ordered by divisibility $\mid$. Is $\mid$ a total order to a partial order on A?

Exercise 5. Consider the set $\mathbb{N} \subset \mathbb{Z}$ ordered by $\leqslant$. Is there a minimal/maximal/least/greatest element? Is the set $\mathbb{N}$ bounded? What are the bounds?

Exercise 6. Consider a subset $[a, b] \subset \mathbb{N}$ ordered by $\leqslant$. Is there a minimal/maximal/least/greatest element? Is the set bounded? What are the bounds?

Exercise 7. Consider the set $\mathbb{Z}$ ordered by $\leqslant$. What are the minimal/maximal/least/greatest elements? What are the bounds?

Exercise 8. Consider the subset $\mathbb{Z}^+$ of positive integers. What are the minimal/maximal/least/greatest elements? What are the bounds?

Exercise 9. Consider the subset $(\sqrt{2}, 5] \subset \mathbb{Q}$. What are the minimal/maximal/least/greatest elements? What are the bounds?

Exercise 10. Consider the set $\mathbb{C}$. What are the minimal/maximal/least/greatest elements? What are the bounds?

Exercise 11. Show that any real number $m \in \mathbb{R}$ is an upper and lower bound for an empty set $\emptyset$.