Homework 1.

(Due Mar. 12)

Problem 1 (Exercise 1.5)**.** Let A be a nonempty set of real numbers which is bounded below. Let $-A$ be the set of all numbers $-x$, where $x \in A$. Prove that

$$\inf A = -\sup(-A).$$

Problem 2 (Exercise 1.8)**.** Prove that no order can be defined in the complex field that turns it into an ordered field.

Problem 3 (Exercise 2.4)**.** Is the set of all irrational real numbers countable?

Problem 4 (Exercise 2.5)**.** Construct a bounded set of real numbers with exactly three limit points.

Problem 5 (Exercise 2.8)**.** Is every point of every open set $E \in \mathbb{R}^2$ a limit point of E? Answer the same question for closed sets in $\mathbb{R}^2$.