

Homework #5 (due 08/31)

- Read pp. 14-21.
- Need to know: definitions of $\mathbb{R}$, upper bound, lower bound, least upper bound, greatest lower bound, maximum, minimum.
- Need to know: Statement of axiom of completeness.
statement of lemma 1.3.2

Do the following problems:

1. Do exercises 1.3.1(a) and 1.3.2.

(Note that in exercise 1.3.2 you need to give an example, or justify that request is impossible)

2. Find without proof the suprema and infima of the following sets.

(a) $\{n \in \mathbb{N} : n^2 < 17\};$

(b) $\left\{\frac{n}{2n-1} : n \in \mathbb{N}\right\};$

(c) $\left\{\frac{n}{m} : n, m \in \mathbb{N} \text{ with } n+m < 12\right\};$

(d) $\left\{\frac{n}{m+n} : m, n \in \mathbb{N}\right\};$

(e) $\{r \in \mathbb{Q} : r^2 < 17\}.$