

## 18.125 Homework 1

due Wed Feb 10 in class

*Note:* The first assignment only covers §1.1, therefore it is shorter than regular homeworks.

1. (2 pts) Do Exercise 1.1.12.
2. (2 pts) Show that any monotone function  $f : [a, b] \rightarrow \mathbb{R}$  is Riemann integrable.
3. (1 pt) Show that the function  $f : [0, 1] \rightarrow \mathbb{R}$  defined by

$$f(x) = \begin{cases} 1, & x \in \mathbb{Q}, \\ 0, & x \notin \mathbb{Q}, \end{cases}$$

is not Riemann integrable.