

Problem Set 9
Due Wednesday, November 27.

Real Analysis
Math 131A, Fall Quarter 2013

1. Do problems 19.1, 19.2, 19.4, 19.5, 19.6, 19.7, 19.9, 19.10, 20.17, 20.18, 20.19 in the textbook.
2. Let $f: S \rightarrow \mathbb{R}$ be a uniformly continuous and bounded function. The function $\omega: (0, +\infty) \rightarrow \mathbb{R}$ given by

$$\omega(\delta) := \sup \{|f(x) - f(y)| : x, y \in S, |x - y| < \delta\}$$

is called the *modulus of continuity* of f . Show that ω is increasing and $\lim_{\delta \rightarrow 0^+} \omega(\delta) = 0$.