Math 315
Homework #12
5/19/2017

# Abbott: 4.2.7, 4.2.8

**4.2.7** Let $g\colon A \to \mathbb{R}$ and assume that $f$ is a bounded function on $A$, in the sense that there exists $M > 0$ satisfying $|f(x)| \leq M$ for all $x \in A$.
Show that if $\lim_{x \to c} g(x) = 0$, then $\lim_{x \to c} g(x)f(x) = 0$ as well.

**4.2.8** Compute each limit or state that it does not exist. Use the tools developed in this section to justify each conclusion.

(a) $\lim_{x \to 2} \frac{|x-2|}{x-2}$

(b) $\lim_{x \to 7/4} \frac{|x-2|}{x-2}$

(c) $\lim_{x \to 0} (-1)^{[[1/x]]}$

(d) $\lim_{x \to 0} \sqrt[3]{x}(-1)^{[[1/x]]}$