

Supplementary problems: Sec. 4.1 # 9b, 9c, 9d, 11a, 11b, 12b, 12c, 12d Do the previous supplementary problems if you haven't already. If you have, just rewrite them and I'll double count it.

Compulsory problems:

(1) [5 pts.] Prove that $\lim_{x \rightarrow 1} \sqrt{x} = 1$.

4.3.7) [7 pts.] Suppose $f(x) \leq g(x)$ for all x . Prove that if the limits exist

$$\lim_{x \rightarrow a} f(x) \leq \lim_{x \rightarrow a} g(x). \quad (1)$$

4.2.10) [7 pts.] Give examples of functions f and g such that f and g do not have limits at a point c , but $f + g$ and fg do.

4.2.9a) [11 pts.] Let $f, g : A \rightarrow \mathbb{R}$ and let c be a limit point of A . Prove that if $\lim_{x \rightarrow c} f(x)$ and $\lim_{x \rightarrow c} f(x) + g(x)$ exist, then so does $\lim_{x \rightarrow c} g(x)$.

Your homework raw score is: $\frac{n}{2m} \cdot M + \left(1 - \frac{n}{2m}\right) \cdot N = N + \frac{n}{2m}(M - N)$. For this homework, $M = 30$, $m = 8$, N is the number of compulsory problems you get correct, and n is the number of supplementary problems you complete. It should be noted that for the supplementary problems I will be looking for **full completion**, but I won't take off points for mistakes.