

HOMEWORK ASSIGNMENTS

Week 1

Read sections 1.1-3

Problems, due Wednesday, 1/28:

- 1.1 # 15
- 1.2 # 7, 9, 12

Extra Credit Problems

- Suppose $a < b$ and $c < d$. Prove that $ad + bc < ac + bd$.
- 1.1 # 19

Week 2

Read sections 1.4-5, 2.1

Problems, due Wednesday, 2/4:

- 1.3 # 8, 19, 27
- 1.4 # 4
- 1.5 # 47a

Extra Credit Problem

- 1.4 # 1g

Week 3

Read section 2.2

Problems, due Monday, 2/9:

- 2.1 # 9c, 10, 14

Extra Credit Problem

- Let c be a nonzero real number, let $\{x_n\}$ be a sequence, and suppose that

$$\lim_{n \rightarrow \infty} \frac{x_n - c}{x_n + c} = 0.$$

What can you conclude about $\{x_n\}$? Prove your answer.

Week 4

Read sections 2.3, 3.1

Problems, due Wednesday, 2/18:

- 2.1 # 27
- 2.2 # 1, 2, 15, 16
- Let $\{x_n\}$ be a bounded sequence and let $\{y_n\}$ converge to 0. Prove that $\{x_n y_n\}$ converges to 0.

Week 5

Read sections 3.2-3

Problems, due Wednesday, 2/25:

- 2.3 # 9, 16
- Let $\{x_n\}$ be a sequence and let $L \in \mathbf{R}$. Suppose that for every positive number ε , and for every positive integer n_0 , there exists $n \geq n_0$ such that $|x_n - L| < \varepsilon$. Prove that there is a subsequence of $\{x_n\}$ converging to L .
- 3.1 # 4c, 10
- Use the definition of limit to prove that

$$\lim_{x \rightarrow 1} \frac{x}{2x - 1} = 1.$$