

Winter 2026 Math 131A
Homework Assignment 1

Problem 1. Ross 1.1, 1.4, 1.9

Problem 2. Ross 2.3

Problem 3. Ross 3.6, 3.8

Problem 4. Use the fact that $\sqrt{2}$ is not a rational number to prove that $\sqrt{1 + \sqrt{1 + \sqrt{2}}}$ is not a rational number.

Problem 5. Prove that $2^n > n^3$ for all integers $n \geq 10$.

Problem 6. Prove the reverse triangle inequality

$$||a| - |b|| \leq |a - b|$$

for all $a, b \in \mathbb{R}$.