

**Winter 2026 Math 131A**  
**Homework Assignment 1**

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**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  $a, b \in \mathbb{R}$ .