

Homework #6, Due: 2/28  
Math 181 (Discrete Structures), Spring 2024

Problem 1 is worth 5 points, and Problem 2 is worth 5 points, for a total of 10 points. Remember to *show your work* and *explain your answers* on all problems!

1. Prove the following:

“For any two positive real numbers  $x$  and  $y$ , if  $xy \geq 2$  then  $x \geq \sqrt{2}$  or  $y \geq \sqrt{2}$ .”

**Hint:** Use a proof by contrapositive or a proof by contradiction.

2. Prove the following:

“For any two sets  $A$  and  $B$ , if  $A \cap B = A \cup B$  then  $A = B$ .”

**Hint:** Use a proof by contrapositive or a proof by contradiction.