SI 9: MinMax/Heyting Arrow Proof and Some Intuition on Sets

1 Min and Max

Consider the following definitions

$$p \leq m \to n \text{ if and only if } min(p, m) \leq n$$
$$m \,\theta\, n \leq p \text{ if and only if } m \leq max(n, p)$$

1. Prove using the definitions of θ and $\to$: $max(m, min(n, p)) = min(max(m, n), max(m, p))$

2 Drawing Sets

Draw Diagrams for the following statements. Draw one diagram each for the cases: $A = B$; $A \neq B$ but $A \cap B \neq \emptyset$; and $A \cap B = \emptyset$:

1. $A \cup B$
2. $A \cap B$
3. $A \setminus B$
4. $A \to B$