Mathematics II
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Homework 1

Due on April 24

1. Prove Proposition 1.1.

2. MWG Exercise 1.B.3.

3. Prove Proposition 1.3.

4. Prove Proposition 1.4.

5. MWG Exercise 1.C.3.

6. Show that WARP is equivalent to the following property:

$$\forall\, x, y \in X : x \succsim^* y \Rightarrow \text{not } y \succ^* x,$$

where $\succsim^*$ and $\succ^*$ are as defined in Definition 1.C.2 and Exercise 1.C.3, respectively.

7. Assume that $\mathcal{B}$ contains all nonempty subsets of X of two elements. Show that if complete preference relations $\succsim$ and $\succsim'$ each rationalize $C(\cdot)$, then $\succsim = \succsim'$ (i.e., for all $x, y \in X$, we have $x \succsim y \iff x \succsim' y$).

8. MWG Exercise 1.D.1.