MATH 6320, Theory of Functions of a Real Variable
Assignment 1

Joel Sleeba

August 27, 2024

1. **Solution:** pass

2. **Solution:** pass

3. **Solution:** Let $\mathcal{M}$ be a σ-algebra of subsets of X which is at most countable. Let E_i be a well ordering of elements of $\mathcal{M}$. Now let

$$B_x = \bigcap_{x \in E_i} E_i$$

Then $B_x \in \mathcal{M}$ since each $E_i \in \mathcal{M}$. Now let y be any element X distinct from x with $y \in B_x$. Since every element in $\mathcal{M}$ is indexed by $\mathbb{N}$, and $B_y \in \mathcal{M}$, $B_y = E_j$ for some $j \in \mathbb{N}$.