

Math Homework Week 1

Tom Curran

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1 Problem 1

- $\mathcal{G} = \{A, A \subset \mathbb{R}, A \text{ open}\}$
 - if A is an open set on $(-\infty, 0)$ then its complement is $[0, \infty)$
 - According to the definition of a algebra, A is an \mathcal{A} or \mathcal{S} if it's complement is a closed set. And since A^c is only half closed, A cannot be an algebra
- $\mathcal{G} = \{A, A \text{ is a finite union of intervals of the form } (a, b], (-\infty, b], \text{ and } (a, \infty)\}$
 - if $A = \cup_{i=1}^n (a_i, b_i]$ where $-\infty \leq a_i \leq b_i \leq \infty$ then
 - $A^c = (\infty,)$
- $\mathcal{G} = \{A, A \text{ is a countable union of } (a, b], (-\infty, b], \text{ and } (a, \infty)\}$