Solutions to the Analysis Preliminary Exam Study Guide

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Exercise 1 (May 19)**.** *Let $\mathcal{A}$ be an algebra of sets that is closed under countable increasing unions. Show that $\mathcal{A}$ is a σ-algebra.*

Exercise 2 (Jan 18)**.** *Let $\mathcal{S}$ be the collection of all subsets of $[0,1)$ which can be written as a finite union of intervals of the form $[a,b) \subseteq [0,1)$. Show that $\mathcal{S}$ is an algebra of sets, but is not a σ-algebra.*