MATH 111

Homework

1998

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1. We will call a subset X of $\mathbb{R}$ square-closed if for all $x \in X$, $x^2 \in X$ also.

1a. Show that $\varnothing$ and $\mathbb{R}$ are square closed subsets of $\mathbb{R}$.

1b. Show that if Π is a set of square-closed subsets of $\mathbb{R}$, then $\cup\Pi$ and $\cap\Pi$ are square closed subsets of $\mathbb{R}$.

1c. Let A be any subset of $\mathbb{R}$. Show that there is a smallest square-closed subset A^* that contains A.

1d. Let A be any subset of $\mathbb{R}$. Show that there is a largest square-closed subset A° of A.