

504 Question 1 – AMS QUALIFYING EXAM – Spring, 2006

Let $A \subset \mathbb{R}$ be bounded. If $\alpha \in \mathbb{R}$, define $\alpha + A = \{\alpha + x : x \in A\}$. Prove that $\sup(\alpha + A) = \alpha + \sup A$.

504 Question 2 – AMS QUALIFYING EXAM – Spring, 2006

Let E_n , $n = 1, 2, \dots$ be dense open sets in \mathbb{R}^k . Prove that $\bigcap_{n=1}^{\infty} E_n$ is dense in \mathbb{R}^k .