

Solutions for HW 1

Exercise 0.0.1: Solution: Let $A_n = \{\alpha \in A : x_\alpha \geq \frac{1}{n}\}$. Then $\{\alpha \in A : x_\alpha > 0\} = \cup_{n=1}^{\infty} A_n$. Hence it suffices to show that each A_n is finite. Denote by S the sum $\sum_{\alpha} x_\alpha$. Then

$$\sum_{\alpha \in A_n} \frac{1}{n} \leq \sum_{\alpha \in A_n} x_\alpha \leq S$$

implies that A_n has at most nS elements and we are done.