

Given a set S of $2n - 1$, $n \in \mathbb{N}$, different irrational numbers. Prove that there are n different elements $x_1, x_2, \dots, x_n \in S$ such that for all nonnegative rational numbers a_1, a_2, \dots, a_n with $a_1 + a_2 + \dots + a_n > 0$ we have that $a_1x_1 + a_2x_2 + \dots + a_nx_n$ is an irrational number.