

Let  $v_0$  be the zero vector in  $\mathbb{R}^n$  and let  $v_1, v_2, \dots, v_{n+1} \in \mathbb{R}^n$  be such that the Euclidean norm  $|v_i - v_j|$  is rational for every  $0 \leq i, j \leq n+1$ . Prove that  $v_1, v_2, \dots, v_{n+1}$  are linearly dependent over the rationals.