16 I 2017

The problems for "extra points"...

Problem I

Is the following (Conjecture (being an analog of Thm. "On closed convex sets representation", p. LF-34) true?

Conjecture

Let X be a real linear space ($X \neq \{0\}$) and C – a convex subset of X. Then C is an intersection of a of some half-spaces in X.

Here a half-space in X means $\varphi^{-1}([g;+\infty))$ or $\varphi^{-1}((g;+\infty))$ for arbitrary $\varphi \in X^{\#} \setminus \{0\}$ and $g \in \mathbb{R}$.

Problem II

Is any permutation of each Schauder base also a Schauder base? (if $\{x_n\}_{n\geq 1}$ – a S.b. then its permutation is defined by $\{x_{p(n)}\}_{n\geq 1}$, where p is an arbitrary bijection of $\mathbb{N}_1$ (onto $\mathbb{N}_1$))