

## Exercises

E6.26 [OBF] Let  $I_n \subseteq \mathbb{R}$  (for  $n \in \mathbb{N}$ ) be closed and bounded non-empty intervals, such that  $I_{n+1} \subseteq I_n$ : show that  $\bigcap_{n=0}^{\infty} I_n$  is not empty.

*This result is known as **Cantor's intersection theorem** [27]. It is valid in more general contexts, see [OVP] and [OJ6].*

If we replace  $\mathbb{R}$  with  $\mathbb{Q}$  and assume that  $I_n \subseteq \mathbb{Q}$ , is the result still valid?