## Exercises

E18.a.5 [1K4]Prerequisites:[1HR],[0V3],[0VR],[1K2],[1K0].Difficulty:**.Note:A

*version of Ascoli–Arzelà's theorem.*

Let $I \subseteq \mathbb{R}$ be a closed and bounded interval. Let $C(I)$ be the set of continuous functions $f : I \to \mathbb{R}$. We equip $C(I)$ with distance $d_\infty(f,g) = \|f-g\|_\infty$. We know that metric space $(C(I), d_\infty)$ is complete.

Let $\mathcal{F} \subseteq C(I)$: the following are equivalent.

1. $\mathcal{F}$ is compact
2. $\mathcal{F}$ is closed, it is equicontinuous and bounded (i.e. $\sup_{f\in\mathcal{F}} \|f\|_\infty < \infty$).