

## Exercises

0.155 [OYD] Prerequisites: [OR2]. One can easily show that a function  $f : \mathbb{R}/2\pi \rightarrow X$  can be seen as a periodic function  $\tilde{f} : \mathbb{R} \rightarrow X$  of period  $2\pi$ , and vice versa.

This can be easily obtained from the relation  $f([t]) = \tilde{f}(t)$  where  $t$  is a generic element of its equivalence class  $[t]$ . Assuming that  $\tilde{f}$  is periodic (with period  $2\pi$ ), the above relation allows to derive  $f$  from  $\tilde{f}$  and vice versa.

Show that  $f$  is continuous if and only if  $\tilde{f}$  is continuous.