GENERAL TOPOLOGY
HOMEWORK FOR WEEK 3

DEADLINE: MON 17.3, 23:59

Exercise 1. *Prove this statement of Theorem 2.11: If the topology on X is induced by a family of maps $f_i : X \to Y_i, i \in I$, then a map $g : Z \to X$ is continuous if and only if $f_i \circ g : Z \to Y_i$ is continuous for all $i \in I$.*

Exercise 2. *Let $(x_n) \subset X$ be a sequence converging to a point $a \in X$. Prove that the set $A = \{a\} \cup \{x_n : n \in \mathbb{Z}_+\}$ is compact.*