GENERAL TOPOLOGY
HOMEWORK FOR WEEK 2

DEADLINE: MON 11.3, 23:59

Exercise 1. *Let X be a Hausdorff space and suppose that $(x_n), (y_n)$ are two sequences in X which converge to points x and y respectively. Furthermore, assume that for every $n \in \mathbb{N}$ and every neighbourhood U of x_n, there is a $m \geq n$ such that $y_m \in U$. Prove that $x = y$.*

Exercise 2. *Let $f : X \to Y$ be a function between topological spaces which is* ***locally open****, meaning that for every point $x \in X$ there exists a neighbourhood U_x of x such that $f|_{U_x} : U_x \to Y$ is an open map. Prove that f is an open map.*