GENERAL TOPOLOGY
HOMEWORK FOR WEEK 4

DEADLINE: MON 25.3, 23:59

Exercise 1. *Let $A, B \subset X$ be open sets such that $A \cup B$ and $A \cap B$ are connected. Show that A and B are connected.*

Another formulation for X being a **normal space** is that for every two open sets $U, V \subset X$ such that $U \cup V = X$, there exist closed sets $A \subset U$ and $B \subset V$ such that $A \cup B = X$.

(This is easy to prove with de Morgan's laws, you don't need to do it here but should check it for yourself.)

Exercise 2. *Let $f : X \to Y$ be a continuous and closed surjection. Prove that if X is normal, then Y is normal.*