

**Problems in Topology (Math436)**

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Read Chapter 6

- (1) Problem 4 page 84.
- (2) Problem 9 page 84.
- (3) Problem 12 page 85.
- (4) Prove that a topological space  $X$  is normal if and only if for any  $F \subset X$  closed, and any open  $U \subset X$ , with  $F \subset U$ , there is an open  $V \subset X$  so that

$$F \subset V \subset \bar{V} \subset U.$$

(Hint: follow a similar proof for “regular“)

- (5) (\*) Prove that the Sorgenfrey line  $\mathbb{S}$  is normal. (Recall that we showed in a previous homework that it is Lindelöf.)