

## MTG 5316/4302 FALL 2018 ASSIGNMENT 7

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These problems are due in class on Friday, October 19, 2018.

You may discuss the problems with members of the class and with me. You may consult the textbook and other books. You may not read the papers of other students. The final writeup must be done by yourself in your own words. It must not be copied from any source.

**Problem 1.** Let  $\mathbb{R}_s$  be the **Sorgenfrey line**. Show that  $\mathbb{R}_s$  is a normal space.

**Problem 2.** Let  $X \subset \mathbb{R}_s$ . Show that  $X$  is normal in the subspace topology.

**Problem 3.** Show that a compact subset of  $\mathbb{R}_s$  is countable.

**Problem 4.** Show that the rationals  $\mathbb{Q}$  are dense in  $\mathbb{R}_s$ .

**Problem 5.** Show that  $\mathbb{Q} \times \mathbb{Q} \subset \mathbb{R}_s \times \mathbb{R}_s$  is dense. Show that  $\mathbb{R}_s \times \mathbb{R}_s$  has an uncountable closed discrete subspace.