

Topology 2, Math 681, Spring 2008: Notes and homework

Krzysztof Chris Ciesielski

Class of January 15: Review: separation axioms and how are they preserved by subspaces and products.

Class of January 16: Section 11: Hausdorff Maximal Principle and Kuratowski-Zorn Lemma; sketch of its proof, via informal transfinite induction. Its use: proof that every linear space has a base.

Class of January 17: Section 37: Definition of a filter; Proof that every maximal family having the finite intersection property is a filter; Proof, using Hausdorff Maximal Principle, that every family having the finite intersection property can be extended to a maximal family having the finite intersection property is a filter; Proof of the Tychonoff Theorem;

Homework: Ex. 1(a)&(c), page 235. **Warning:** One part of the exercise is false. Show it by an example, guess the correct version, and prove it.

Class of January 22: *Plan:* Go over the exercises 4, 2, and 3(?) from Section 37; Review Section 29: Local Compactness;

Further Plans: Section 38: The Stone-Čech Compactification.