Reminder

The first exam, on Chapters 1–4, takes place on February 23 (a week from Friday).

Separation properties that a space might have

T_0: For every two distinct points, there is an open set that contains exactly one. [Exercise 1.3.5]

T_1: Points are closed. [Exercise 1.3.3]

T_2: Every two distinct points can be separated by disjoint open sets. [Exercise 4.1.13]
Such spaces are called *Hausdorff spaces* in honor of Felix Hausdorff (1868–1942).

T_3: In a *regular* space, every closed subset and every point outside the subset can be separated by disjoint open sets.
T_1 + regular = T_3. [Exercise 4.1.17]

T_4: In a *normal* space, every two disjoint closed sets can be separated by disjoint open sets.
T_1 + normal = T_4. [Exercise 6.1.9]

Assignment due next class

- Write a solution to problem 13 in Exercises 4.1 (about Hausdorff spaces).

  Hint for part (vi): If x and y are two distinct limit points, then consider disjoint open sets U and V such that $x \in U$ and $y \in V$. Examine the set $\{y\} \cup U \setminus \{x\}$. What happens if this set is open? What happens if this set is closed?