The midterm exam for Math 54 will be divided into two parts:

- The in-class component will primarily consist of "working" examples and stating definitions. There will be proofs but these are, out of necessity, shorter.

- The take-home component will be handed out Wednesday after the midterm and is due Friday morning (by 10am). It will primarily consist of proofs.

Below are a list of (major) topics we've covered so far:

1. Sets (Day 1)

2. Functions and cardinalities (Day 2)

3. Topologies and bases (Days 3-4)

    - Orders (esp. $<_{lex}$), order topology (Day 5)
    - Product topology (Day 6)
    - Subspace topology (Day 6)

4. Interior, boundary, and closure; closed sets (Days 7-8)

5. Limit points (Day 8)

6. Hausdorff and T_1 spaces (Day 9)

To prepare: For (3-6), while these are the major topics, they are also the major definitions we've used so far. Be comfortable stating or using these ideas. For (1) and (2), know the ideas but you will not be expected to state definitions from topics on either of these days.

Below are a list of the major topological spaces we've seen so far:

- $\mathbb{R}$ with its usual topology

- $\mathbb{R}_\ell$, $\mathbb{R}$ equipped with the lower limit topology

- $\mathscr{T}_d$, the discrete topology

- $\mathscr{T}_t$, the indiscrete or trivial topology

- $\mathscr{T}_f$, the finite complement topology

To prepare: Be able to define these topological spaces/topologies and be prepared to work with subspaces and products of them.