

Choose 2 of the following 6 topics (caveat: you may not choose both “completeness” and “compactness”) and write an essay discussing each topic. Your essay should include (among other things):

- A precise and correct definition of the term / precise statement of the theorem;
- A variety of examples and nonexamples; and
- Some discussion of how the concepts relates to other ideas in the course.

The topics you may choose from are:

1. metric space
2. real number (equivalently, “the set of real numbers”)
3. Cauchy sequence
4. completeness
5. compactness
6. Mean Value Theorem