UPDATED GENERAL INFORMATION — FEBRUARY 26, 2020

Additional reading on homeomorphisms

The file `homeomorphisms.pdf` discusses some important facts about homeomorphic spaces and should be read. Special cases will be given as exercises for study in connection with the third quiz to be given on **Tuesday, March 10.** For the time being, here is a sample problem:

Example. Suppose that $f : X \to Y$ is a homeomorphism of topological spaces such that every nonempty open subset of X contains infinitely many points. Prove that Y has the same property.

Solution. Let V be a nonempty open subset of Y. By continuity $U = f^{-1}[V]$ is an open subset of X, and $f[U] = V$ because f is 1–1 and onto. Since f is onto and V is nonempty, the set U must also be nonempty. Therefore U must have infinitely many points. Finally, since f is 1–1 it follows that it defines a 1–1 correspondence from U to $f[U] = V$, and therefore V must also be infinite.∎

Assignments for Chapters $11 - 13$

Working the exercises listed below is **strongly recommended.**

The following exercises are taken from Sutherland:

- Chapter 11: 11.1, 11.3, 11.6, 11.8
- Chapter 12: $12.1(i) - (iii)$, 12.3, 12.7, 12.13, 12.15, 12.17
- Chapter 13: 13.1–4, 13.10. 13.14, 13.20

The following references are to the file `exercises05w14.pdf` in the course directory.

- Additional exercise for Chapter 11: $1 - 3$
- Additional exercises for Chapter 12: 1, $2(i)$, 4, 5
- Additional exercises for Chapter 13: 1, 2, $3(i)$, 4

Reading assignments from solutions to exercises

Two additional strong recommendations are to read through the solutions to Exercises 12.9, 12.11, 12.16, 13.9, and 13.13 from Sutherland.

We might not get to Chapter 14, and in any case we shall not finish it. The goal is to prove that if X is a compact metric space, then every infinite sequence in X has a convergent subsequence. The converse statement is also true, but it will not be covered in the course.

If the course does cover the portion of Chapter 14 described above, then working the exercises listed below will be **strongly recommended.**

The following exercises are taken from Sutherland:

■ Chapter 13: 13.5

■ Chapter 14: 14.1–2

The following reference is to the file `exercises06w14.pdf` in the course directory.

■ Additional exercise for Chapter 14: 2

Reading assignments from solutions to exercises

Some additional strong recommendations are to read through the solutions to Exercises 14.15 and 14.16 from Sutherland.