

§3.b.c Zorn Lemma, Axiom of Choice, Zermelo’s Theorem

[23R]

There are three fundamental statements in set theory, Zorn’s Lemma, the Axiom of Choice, and Zermelo’s Theorem. It is proven, within the Zermelo–Fraenkel axiomatics, that these are equivalent. See in Chap. 1 in [?] for an elementary presentation, based on the above defined theory. ^{†22}

The first exercise presents some fundamental equivalent ways to state the Axiom of Choice.

Exercises

E3.b.43 [02H]

Remark 3.b.44. [02K]**Exercises**

E3.b.45 [2GF]

E3.b.46 [2BZ]

E3.b.47 [02D]

E3.b.48 [02M]

Many other exercise need Zorn’s Lemma, Axiom of Choice, Zermelo’s Theorem in their proof; to cite a few: [2BX], [02S], [04M], [04P], [04R], [04Z].

Remark 3.b.49. [02C]

^{†22}This theory can be found in many books on Logic, such as [?, ?, ?], but the statements and proofs use a language and mathematical tools that may be too advanced for the intended audience of this book.