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Lecture Notes on Sequences

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Released for classroom use.

Preface

These notes use the Willow Tree Book class, a simplified derivative of `memoir` intended for lecture notes: plain chapters, a bibliography, and definitions and problems set apart from the running text.

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Chapter 1

Convergent Sequences

Definitions

We call a sequence *convergent* if it approaches a single value as its index grows, following the standard treatment in [1].

A Summary Table

Table 1.1 lists the terms defined in this chapter.

Term	Introduced in
Convergent sequence	Section 1.1
Bounded sequence	Section 1.2

Table 1.1: Terms defined in this chapter.

Bounded Sequences

A sequence is *bounded* if all its terms lie within some fixed interval.

1.1 Show that every convergent sequence is bounded.

Problem 1.1 is a standard first exercise [1].

Chapter 2

Closing Remarks

This class does not alter how a bibliography is produced: a plain `amsplain`-styled `.bib` file, resolved the same way it would be under `book`.

Hints

1.1. If a sequence converges to L, all but finitely many terms lie within distance 1 of L; the remaining finitely many terms are trivially bounded, so the whole sequence is bounded.

Bibliography

[1] Donald E. Knuth, *The TEXbook*, Addison-Wesley, Reading, MA, 1984. 1