Exercises given with a numbering are from *Basic Analysis: Introduction to Real Analysis (Vol I)* by J. Lebl.

Reading Sections 0.3, 1.1, 1.2

Exercises

- 1. Exercise 1.1.1
- 2. Exercise 1.1.2
- $3. \ \text{Exercise} \ 1.1.5$
- $4. \ \text{Exercise} \ 1.1.6$
- 5. Exercise 1.2.7
- 6. Exercise 1.2.9
- 7. Let

$$E = \{x \in \mathbb{R} : x > 0 \text{ and } x^3 < 2\}.$$

- (a) Prove that E is bounded above.
- (b) Let $r = \sup E$ (which exists by part (a)). Prove that r > 0 and $r^3 = 2$. *Hint*: Adapt the proof used in Example 1.2.3.

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