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. Exercise 1.1.5
4. 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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