

Abbott, Section 5.2:

Exercises 5.2.3(a,b), 5.2.5 (page 153).

Remarks and hints:

- Exercise 5.2.5: You can use anything about derivatives that you have learned in Calculus (i.e., the formula for the derivative of $f(x) = x^a$ for $a = \text{const}$, $x > 0$).

Abbott, Section 5.3:

Exercises 5.3.1, 5.3.2, 5.3.3, 5.3.7 (pages 160, 161).

Remarks and hints:

- Exercise 5.3.1: The answer to the question in part (b) is NO. Here is an example: $f : [0, 3] \rightarrow \mathbb{R}$ given by $f(x) = \frac{1}{6}x^2$. Explain why this example proves the point (hint: think about the constant c in the statement of Problem 4.3.11).
- Exercise 5.3.2: Can f' change its sign in A without violating the condition on the derivative from the statement of the problem? (Hint: Think about a theorem that we have learned recently.)
- Exercise 5.3.7: This question continues the theme of fixed points started in Additional Problem 3 of Homework 9.