

Section 3.4: Exercises 7, 22(a,c,d), 25. Hints and remarks:

- in each part of Exercise 7, just give a counterexample without a detailed explanation, but be specific: e.g., in part (e) you have to write explicitly the set S and the sets $\text{bd } S$, $\text{cl } S$, and $\text{bd } (\text{cl } S)$;
- in Exercise 22(a), use any of the theorems in the text (this will make the proof of this part of the problem very easy); in Exercise 22(c), you are allowed to use *only* the definition of closure;
- part (a) of Exercise 25 follows directly from one of the theorems proved in class; in parts (b) and (c) you have to give direct proofs using only the definitions.

Section 3.5: Exercises 3(a,c,e), 5, 8. Hints and remarks:

- in Exercise 5(a), you have to prove the claim by using two different methods:
 - Method 1 – you may use the basic theorems about compact sets (Heine-Borel, Bolzano-Weierstrass, the Nested Intervals Theorem), and any other results from the book;
 - Method 2 – you are *not* allowed to use any of the theorems in the book, but only the definition of compactness.

Section 4.1: Exercises 6(c,d,f), 9, 10.

Food for Thought:

- Sec. 3.2, exercises 6, 7 (these results are useful in proving convergence of sequences).
- Sec. 3.4, exercises 1, 2, 6, 13.
- Sec. 3.5, exercises 1, 2.
- Sec. 4.1, exercises 1, 2, 4, 5, 8.