Homework 6

Problems 5, 21 and 22 from the end of Chapter 3, on pages 78 and 82. For problem 5, also provide an example where the inequality is strict.

Also problems 2, 3, 4 from the end of Chapter 4, pages 98 and 99.

Finally, the following additional problem (the converse to Problem 2 from Chapter 4).

E1. Let $f : X \to Y$ be a map between metric spaces such that for all subsets $E \subseteq X$ we have

$$f\left(\overline{E}\right) \subseteq \overline{f(E)}.$$

Show that f is continuous.