Homework #5

Schedule for rest of the semester:

- Monday 11/21: Lecture (Section 8.1)
- Monday 11/28: Lecture
- Wednesday 11/30: Lecture
- Friday 12/2: Review for Midterm #3
- Monday 12/5: **Midterm #3** (covers Section 6.3 through 11/30 lecture: compactness, connectedness, and continuity)
- Wednesday 12/7: Discussion of Midterm #3, last day of class
- Monday 12/12: **Optional Final Exam, 3:00–5:00pm**

1 Show that if S is a connected subset of the metric space (X, d) then its closure $\overline{S}$ is also connected.

2 Let (X, d_X) be any metric space and (Y, d_Y) be any metric space *with the discrete metric*. Determine, with proof,

(a) all continuous functions $f : Y \to X$ and

(b) all continuous functions $f : \mathbb{R} \to Y$.