Metric Space Properties of Euclidean Spaces Exercises

All the exercises are from Simon & Blume.

1. Exercise 12.11.

2. Exercise 12.13.

3. Exercise 12.14.

4. Exercise 12.15. *Hint*: You need to show that an open interval (a, b) is an open ball and that an open ball in $\mathbb{R}$ is an open interval.

5. Exercise 12.18 and 12.19. *Hint*: These exercises are very similar. Use the definition of a closed set, or use the theorem which says that a set is closed iff its complement is open together with the definition of an open set.

6. Exercise 12.20.

7. Exercise 12.21.

8. Exercise 12.27.

9. Exercise 12.29.

10. Exercise 12.30.

11. Exercise 12.31.

12. Exercise 12.32. *Hint*: Use theorem 12.10.