

Homework 3

Due Friday, October 2

SEA: Ch 2.1 # 5, 8, 11, 14
Ch 2.2 # 10af, 11abc, 12c, 13b, 14bc, 15
Ch 2.3 # 5b, 9, 11c, 13

Problem A:

Prove that the union of two closed intervals which are not disjoint is a closed interval.

Problem B:

- i. Give an example of a family of open intervals whose intersection is $[0,1]$.
- ii. Give an example of a family of closed intervals whose union is $(0,1)$.

Problem C:

Prove that for any $\varepsilon > 0$, \mathbb{R} is the union of a family of open intervals, each of which has length ε .