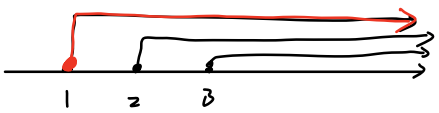
HW §2.2

#57. d). $A_i = [i, +\infty)$

$A_5 = [5, +\infty)$



$\bigcup_{i=1}^{\infty} A_i = A_1 \cup A_2 \cup \cdots$

$= [1, +\infty) \cup [2, +\infty) \cup [3, +\infty) \cdots$

$= [1, +\infty)$

$\bigcap_{i=1}^{\infty} A_i = A_1 \cap A_2 \cap A_3 \cap \cdots$ (smaller common set)

$= [1, +\infty) \cap [2, +\infty) \cap [3, +\infty) \cap \cdots$

$= \phi$

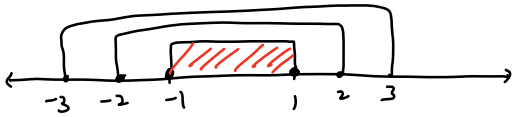
b). $A_i = \{-i, i\}$

$\bigcup_{i=1}^{\infty} A_i = A_1 \cup A_2 \cup A_3 \cdots$

$= \{-1, 1\} \cup \{-2, 2\} \cup \{-3, 3\} \cdots$

$= \mathbb{Z} - \{0\}$

$\bigcap_{i=1}^{\infty} A_i = \phi$



c). $A_i = [-i, i]$

$\bigcup_{i=1}^{\infty} A_i = [-1, 1] \cup [-2, 2] \cup [-3, 3] \cup \cdots = (-\infty, +\infty)$

$\bigcap_{i=1}^{\infty} A_i = [-1, 1] \cap [-2, 2] \cap [-3, 3] \cap \cdots = [-1, 1]$