1. Sketch the most general Venn diagram for three sets $A, B, C$, and shade the region
   (a) $(C - B) \cup A$
   (b) $C \cap (A \cup B)$
2. Give an example of sets $A, B, C$ which are intervals, and for which $A \subseteq B, A \subseteq C, B \nsubseteq C$.
3. Let $\Lambda = (0, 1)$ be the index set, and define $D_r = (-1/r, r + 1)$ for each $r \in \Lambda$. Find the sets
   (a) $\bigcap_{r \in \Lambda} D_r$
   (b) $\bigcup_{r \in \Lambda} D_r$
4. Find a collection of sets $\{A_n\}$ indexed by $\mathbb{N}$ for which $\bigcap_{n=1}^{\infty} A_n = \{-1, 0, 1\}$ and $\bigcup_{n=1}^{\infty} A_n = \mathbb{Z}$. 