1. Write each of the following in as simple a way as possible:

   (a) $[1,3] - [2,5]$

   (b) $[1,3] \cap [2,5]$

   (c) $[1,3] \cup [2,5]$

   (d) $(3,6) - (6,8)$

   (e) $(3,6) \cap (6,8)$

   (f) $(3,6) \cup (6,8)$

   (g) $\bigcap_{n \in \mathbb{Z}^+} \left(\frac{-1}{n}, \frac{1}{n} \right)$

   (h) $\bigcup_{n \in \mathbb{Z}^+} \left(\frac{-1}{n}, \frac{1}{n} \right)$

   Circle T or F for each of the following statements:

   (i) $\{\varnothing\} \in \{\varnothing, a, b\}$ T   F

   (j) $\{\varnothing\} \subseteq \{\varnothing, a, b\}$ T   F

2. $(A \cup B) \cap C = A \cup (B \cap C)$

3. $A \cap \left(\bigcup_{i \in I} B_i \right)' = \bigcap_{i \in I} (A \cap B_i')$.

4. (a) $\forall a, b, c \in \mathbb{R}, a < b \Rightarrow a - c < b - c$

(b) $\forall a, b, c \in \mathbb{R}, a < b$ and $c > 0 \Rightarrow \frac{a}{c} < \frac{b}{c}$

5. $\forall x \in \mathbb{R}, -|x| \le x \le |x|$.