

1. Write each of the sets below as simply as possible:

(a) What is $\{1, 3\} - \{2, 4\}$?

(b) What is $(1, 3) - (2, 4)$?

(c) What is $[1, 5] \cap [5, 8]$?

(d) What is $\{1, 2\} \times \{2, 4\}$?

(e) What is $\mathcal{P}\{1, 2\}$?

2.

$$\left(\bigcup_{i \in I} A_i\right)' = \bigcap_{i \in I} A_i'$$

3. (a) $\forall a, b, c, d \in \mathbb{R}, a > b \wedge c > d \Rightarrow a + c > b + d.$

(b) $\forall a, b, c, d \in \mathbb{R}, a > b \wedge c > d \Rightarrow a - c > b - d.$

4. $\forall i \in \mathbb{Z}^+$ let $A_i = [0, 1/n]$

(a) What is $\bigcap_{i \in \{1,2,3\}} A_i$?

(b) What is $\bigcap_{i \in \mathbb{Z}^+} A_i$?

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