

Worksheet 4b

1. $A = \{1, 5, 9\}$, $B = \{-3, 5, 14\}$, $C = \{\{1, 5\}, 9, 10\}$

Describe the following sets:

a. $A \cap B$

b. $A \cup C$

c. $A \setminus B$

d. $A \setminus C$

e. $B \cap C$

f. $(A \cup B) \cup C$

g. $A \cup (B \cup C)$

2. Let $A = \{2, 7, \{2, 7\}, \emptyset, \mathbb{N}, \mathbb{Q}, 2021\}$ and $B = \left\{\{\emptyset\}, \frac{3}{5}, 7\right\}$

Compute the following

- a. $|A| =$
- b. $|B| =$
- c. $A \cap B =$
- d. $A \setminus B =$

Give the truth value of the following statements

- e. $\emptyset \subseteq A$
- f. $\emptyset \subseteq B$
- g. $\emptyset \in A$
- h. $\emptyset \in B$
- i. $\{\emptyset\} \subseteq A$
- j. $\{\emptyset\} \subseteq B$
- k. $\{\emptyset\} \in A$
- l. $\{\emptyset\} \in B$
- m. $8 \in A$

3. Let $A = \{\emptyset, \{\emptyset\}, \{\{\emptyset\}\}\}$

Describe the following sets

a. $\emptyset \cap A$

b. $\{\emptyset\} \cap A$

c. $\emptyset \cup A$

d. $\{\emptyset, \{\emptyset\}\} \cup A$

4. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$ be the universe

Define $A = \{1, 3, 7\}$, $B = \{2, 5, 8\}$, and $C = \{3, 4, 5, 6\}$

Describe the following sets:

a. A^c

b. B^c

c. C^c

d. $A \cup B \cup C$

e. $(A \cup B \cup C)^c$

f. $A^c \cap B^c \cap C^c$

g. $A \cap C$

h. $(A \cap C)^c$

i. $A^c \cup C^c$

What conjecture can you make?