

Instructions

- Answer each question completely; justify your answers.
- This assignment is due at 9:00 am on October 2, 2001.

1. Exercise 1.2.5

2. Exercise 1.2.10

3. Exercise 1.2.12

4. Exercise 1.2.21

5. Exercise 2.1.1 (except parts (a) and (c))

6. Let $A = \{1, 3, 4, 8\}$, $B = \{3, 7, 9\}$, and $C = \{2, 4, 6, 7\}$.

(a) Draw a Venn diagram showing the relationship between the sets. Label each element.

(b) What are:

i. $A \cap B$

ii. $B \cup C$

iii. $A \cup (B \cap C)$

iv. $(A \cup B) \cap C$

v. $A \setminus (B \cap C)$

vi. $(B \cup C) \setminus A$

7. Let $A = \{a, b, \{b, c, d\}, \{c, d, e, f\}, f, g, \{g, h\}\}$.

(a) What is $|A|$?

(b) Indicate whether the following statements are true or false:

i. $b \in A$

ii. $c \in A$

iii. $d \in A$

iv. $\emptyset \in A$

v. $\emptyset \subseteq A$

vi. $g \subseteq A$

vii. $\{b, c, d\} \subseteq A$

viii. $\{b, c, d\} \in A$

ix. $\{c, d, e, f\} \subseteq A$

x. $\{c, d, e, f\} \in A$

xi. $\{a, f, \{g, h\}\} \subseteq A$