

# WORKSHEET 2

Date: 09/29/2022

Name:

## Definitions

**DEFINITION 1** (Set).

**DEFINITION 2** (union).

**DEFINITION 3** (intersection).

**DEFINITION 4** (set difference).

**DEFINITION 5** (subset).

**DEFINITION 6** (equality of sets).

**DEFINITION 7** (empty set).

**DEFINITION 8** (Cartesian product).

**DEFINITION 9** (cardinality).

# Practice Problems

1. Let  $S = \{1, \{2, 3\}, 4\}$ . Indicate whether each statement is true or false.

(a)  $|S| = 4$

(b)  $\{1\} \in S$

(c)  $\{2, 3\} \in S$

(d)  $\{1, 4\} \subseteq S$

(e)  $2 \in S$

(f)  $S = \{1, 4, \{2, 3\}\}$

(g)  $\emptyset \subseteq S$

2. Suppose  $A = \{0, 2, 4, 6, 8\}$ ,  $B = \{1, 3, 5, 7\}$  and  $C = \{2, 8, 4\}$ . Find:

(a)  $A \cup B$

(b)  $A \setminus C$

(c)  $B \setminus A$

(d)  $B \cap C$

(e)  $C \setminus B$

3. For each of the following sets, list the elements. For infinite sets, list five of the elements.

(a)  $\{\cos(\frac{k\pi}{2}) : k \in \mathbb{Z}\}$

(b)  $\{5z : |2z| < 5, z \in \mathbb{Z}\}$