

Section 2.1

Ex. 2:

a. $\{x=3n \mid n \text{ is an integer and } 0 \leq x \leq 12\}$

b. $\{x \in \mathbb{Z} \mid -3 \leq x \leq 3\}$

c. $\{x \mid x \text{ can be } m, n, o, p\}$

Ex. 10:

True: b, d, e, f

False: a, c, g

Ex. 20:

a. 0

b. 1

c. 2

d. 3

Ex. 24:

a. Yes.

b. Yes.

c. No.

d. Yes.

Ex. 34:

a. $A^3 = \{(a, a, a)\}$

b. $A^2 = \{(0, 0), (0, a), (a, 0), (a, a)\}$

$A^3 = \{(0, 0, 0), (0, 0, a), (0, a, 0), (0, a, a),$

$(a, 0, 0), (a, 0, a), (a, a, 0), (a, a, a)\}$

Ex. 44:

$$x(1-x) < 0$$

a. $\{x \mid x \geq 1\}$

a. $\{x \in \mathbb{Z} \mid x \geq 1\}$

b. $\{x \in \mathbb{Z} \mid x \geq 1\}$ b. \emptyset

c. $\{x \in \mathbb{Z} \mid x > 1 \text{ or } x < 1\}$ ($\{x \in \mathbb{Z} \mid x \neq 1\}$)

Section 2.2

Ex. 7:

a. Using Venn Diagram $A \cup U = U$

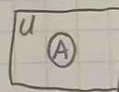


b. Using Venn Diagram: $A \cap \emptyset = \emptyset$



Ex. 8:

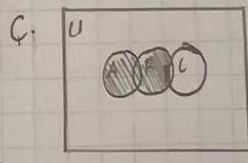
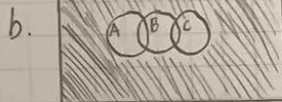
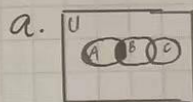
a. By using Venn diagram



$$A \cup A = A$$

$$A \cap A = A$$

Ex. 26:



Ex. 48

$\{\dots, -2, -1, 0, 1, \dots, n\}$

a. $\bigcup_{i=1}^n A_i = \{1, 2, 3, \dots, i\}$

b. $\bigcap_{i=1}^n A_i = \{n\}$