

Phase 8 : Set Comprehension

Example 1 : Set by Predicate

(a)

Basic set comprehension with domain

$$\{x:\mathbb{N} \mid x > 0\}$$

(b)

Multi variable set

$$\{x, y:\mathbb{N} \mid x = y\}$$

(c)

Set without domain

$$\{x \mid x \in A\}$$

Example 2 : Set by Expression

(a)

Set comprehension with expression part

$$\{x:\mathbb{N} \mid x > 0 \bullet x^2\}$$

(b)

Combining set comprehension with quantifier

$$\forall x:\mathbb{N} \bullet x \in \{y:\mathbb{N} \mid y > 0\}$$

Example 3 : Complex Examples

(a)

Set comprehension in equivalence

$$\{x:\mathbb{N} \mid x > 0\} = \{y:\mathbb{N} \mid y > 0\}$$

(b)

Set comprehension with multiple conditions

$$\{x:\mathbb{N} \mid x > 0 \wedge x \leq 10\}$$