

3

3

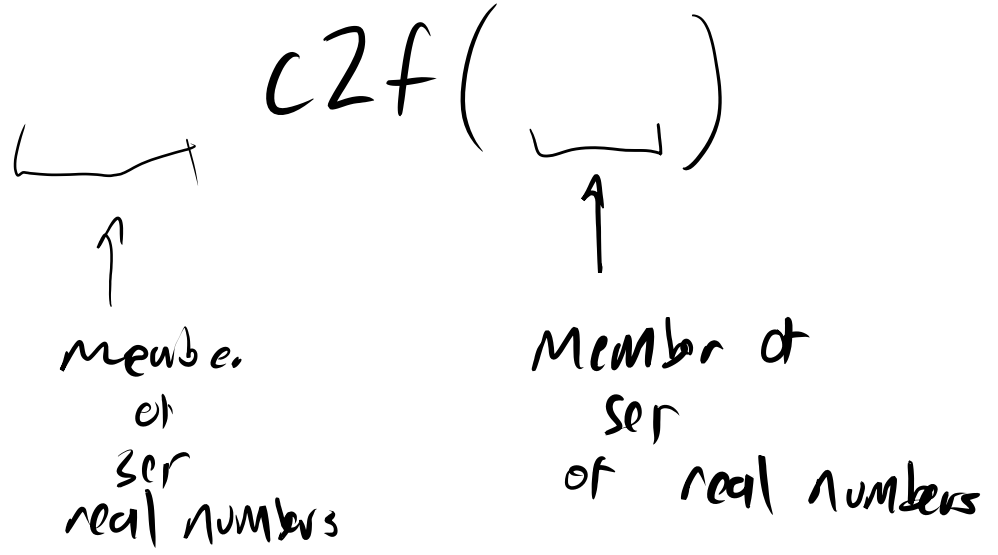
2+1

{1, 2}

{2, 1}

{1, 1+1}

Sets



Test cases

wrong

Problems / tasks

Solutions / algorithms

$$2 + 3 = 5$$

$$\top \wedge \perp = \perp$$

$$\underline{2} \in \{ \underline{1}, 2 \} = \top$$

$$3 \in \{ 1, 2 \} = \perp$$

$$3 \notin \{ 1, 2 \} \equiv \neg(3 \in \{ 1, 2 \}) = \top$$

$$\{2\} \in \{1, 2\} = \underline{\perp}$$

$$\{2\} \in \{ \{1\}, \{2\} \} = \top$$

$$\{2\} \in \{ \{1, 2\} \} = \perp$$

$$\{2\} \in \{ \{2\} \} = \top$$

$$\{2\} \in \{ \{ \{2\} \} \} = \perp$$

$A \subseteq B$ iff

all elements of A
are also elements of B



Subset



Superset



proper subset



proper superset

$A \subset B$ iff

$A \subseteq B \wedge A \neq B$

$$P = \{1, 2, 3\}$$

$$Q = \{2, 3\}$$

$$r = \{1, 3, 4\}$$

P	\subseteq	P	= T
P	\supset	Q	= T
P	\subset	r	= T
r	\supset	Q	= T

or \supseteq

or \supseteq

q's answer is in
set A
 $x \in A$

— $x = g(\dots)$

$y = f(x)$

— f works for set W

ok if $A \subseteq W$

$A \cup B =$ set of all
members in $A \vee$ in B

\cup

Union

$A \cap B =$ set of all
members in $A \wedge$ in B

\cap

intersection

$A \setminus B =$ set of all
members in $A \wedge \neg$ in B

\setminus

difference

$$\{1, 2\} \setminus \{1\} = \{2\}$$

$$\{1\} \setminus \{1, 2\} = \{\}$$

$$\{1, \{2\}\}$$

$$\{1, \{2\}\}$$

$$\cup \{2, \{3\}, 1\} = \{1, 2, \{2\}, \{3\}\}$$

$$\cap \{2, \{3\}, 1\} = \{1\}$$

$$|\{1, 4, 5\}| = 3$$

Cardinality

$$|\{\{1, 2\}, 3, 4\}| = 3$$

$$|\emptyset| = 0$$

$$|\{\{3\}\}| = 1$$

$$|\{\{\{3\}\}\}| = 1$$

Power set of A

$$\text{pow}(A) = \text{Set of all subsets of } A$$

$$\text{pow}(\{1, 2, 3\}) = \{ \{\}, \{1\}, \{2\}, \{3\}, \{1, 2\}, \{1, 3\}, \{2, 3\}, \{1, 2, 3\} \}$$

$$|\text{pow}(A)| = 2^{|A|}$$