

X
X
X

✓

1

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{}
}

<

1

}

disjoint

$$\{\} \subseteq \{1\}$$

$$\{\} \subseteq \{\{\}, \{1\}\}$$

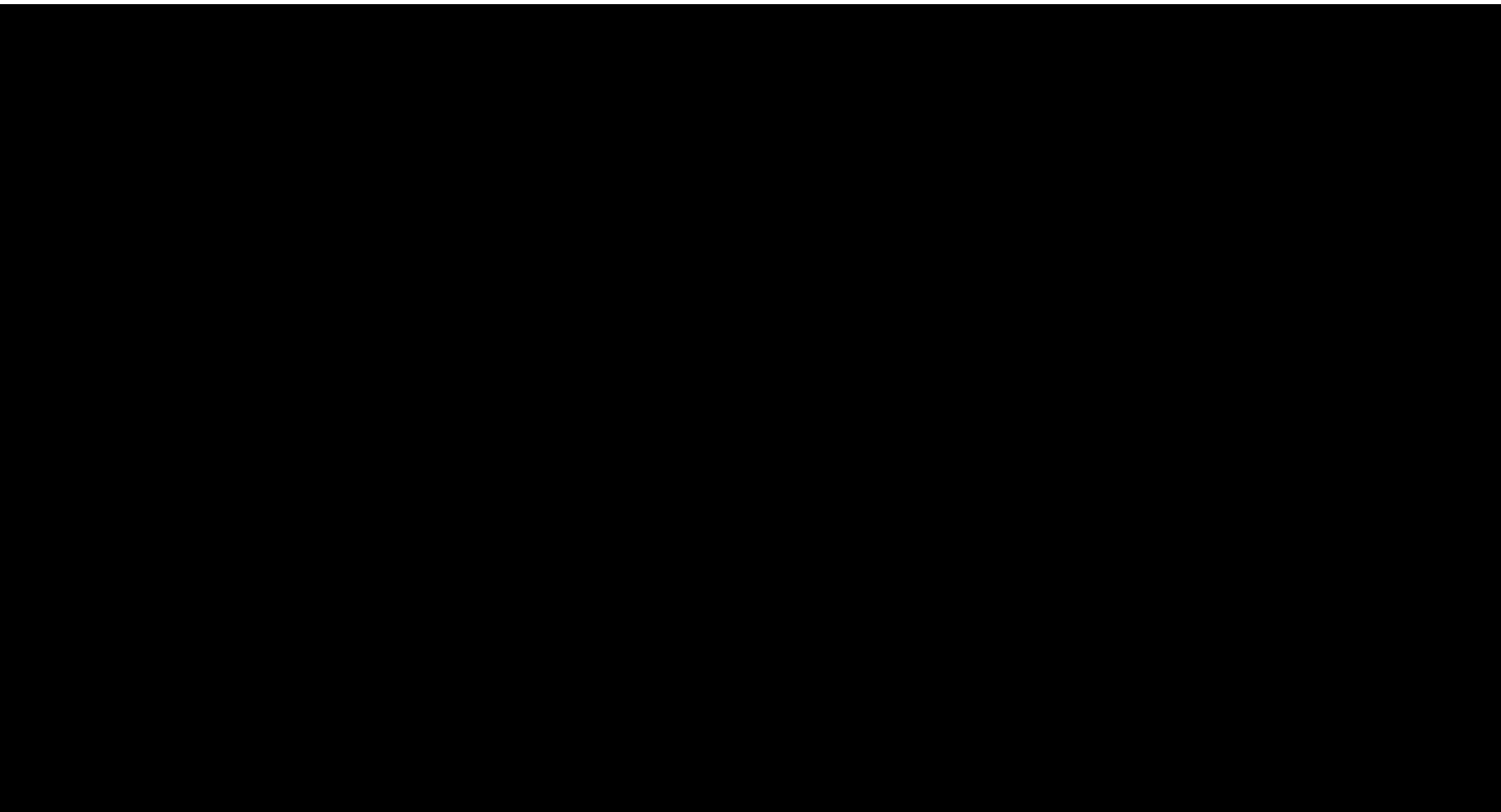
$$\{\} \in \{\{\}, \{1\}\}$$

$$\emptyset = \{\}$$

$$P(\emptyset) = \{\{\}\}$$

$$P(P(\emptyset)) = \{\{\}, \{\{\}\}\}$$

$$P(P(P(\emptyset))) = \{\{\}, \{\{\}\}, \{\{\{\}\}\}, \{\{\}, \{\{\}\}\}\}$$



Sets

Uncardinal
no dup

{ }

Cardinality

member (element)

\emptyset

Seq

Order

dup

()

length of (2, 1, 0, 2) = 4

item (element)

\in \in

~ Tuple

pair

triple

4-Tuple

3-Tuple

Subroutine
function
method
procedure

code

$f(x)$

Integer Sequences = $\{x \mid x \in \mathbb{Z}^k \wedge k \in \mathbb{N}\}$

int $\sim \mathbb{Z}$ Kleene Star \mathbb{Z}^*

float/double $\sim \mathbb{R}$

Str/String \sim set of all sequences of \mathbb{Z}

characters \sim int $\sim \mathbb{Z}$

$$x \in A \wedge y \in A \equiv x, y \in A$$

$$\mathbb{Z} \times \mathbb{Z} = \left\{ (x, y) \mid \begin{array}{l} x, y \in \mathbb{Z} \\ x \in \mathbb{Z} \\ y \in \mathbb{Z} \end{array} \right\}$$

Cartesian Product

$$\{(0, 0), (21, 2), (-11, 11) \dots\}$$

$$\mathbb{Z} \times \{T, L\} = \{(3, T), (-3, L), (8, L), \dots\}$$

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

$$\{(1, 1), (1, 4), (2, 1), (2, 4), (3, 1), (3, 4)\}$$

Variable -arity

$$A \times B \times C = \{(a, b, c) \mid a \in A \wedge b \in B \wedge c \in C\}$$

$$(A \times B) \times C = \{(a, b), c \mid \text{''} \}$$

$$|A \times B| = |A| \cdot |B|$$

$$|D(1)| = 2^{|A|}$$

Cartesian Power

$$\mathbb{Z}^3 = (\mathbb{Z} \times \mathbb{Z} \times \mathbb{Z})$$

$$\mathbb{Z}^0 = \{()\}$$

$$\mathbb{Z}^1 = \{(0), (3), (-108), \dots\}$$

$$|A^3 \times B \times A^2 \times C^5| = |A|^3 \cdot |B| \cdot |A|^2 \cdot |C|^5$$

$$A \times A \times A \times B \times A \times A \times C \times C \times C$$