Practice 04

PROBLEM 1 *Set definition*

Let $A = \{1, 2, 3, 4\}$, $B = \{2x \mid (x \in \mathbb{N}) \wedge x < 5\}$, $C = \mathcal{P}(\{2, 3\})$. Show the full set of members in each of the following sets using curly-brace notation (not set-builder or operator-defined notation):

$B = \underline{\{0, 2, 4, 6, 8\}}$

$C = \underline{\{\{\}, \{2\}, \{3\}, \{2, 3\}\}}$

$|C| = \underline{4}$

$A \cup B = \underline{\{0, 1, 2, 3, 4, 6, 8\}}$

$A \cap B = \underline{\{2, 4\}}$

$A \setminus B = \underline{\{1, 3\}}$

$A \cup C = \underline{\{1, 2, 3, 4, \{\}, \{2\}, \{3\}, \{2, 3\}\}}$

$A \cap C = \underline{\{\}}$

$\{x \mid x \in A \wedge x \in B\} = \underline{\{2, 4\}}$

$\{x \mid x \in A \vee x \in B\} = \underline{\{0, 1, 2, 3, 4, 6, 8\}}$

$\{x \mid x \in A \wedge 2x \in A\} = \underline{\{1, 2\}}$

$\left\{x \mid (x \in B) \wedge (\forall y \in A . x > y)\right\} = \underline{\{6, 8\}}$

$\left\{X \mid (X \in C) \wedge (\exists y \in X . y \in B)\right\} = \underline{\{\{2\}, \{2, 3\}\}}$