Name ....

1. Write the mathematical formulas corresponding to the following statements with the help of the following signs only: propositional connectives, quantifiers, variables varying through set $\mathbb{R}$ and symbols indicated in brackets

a) *every real number has exactly one cube root* $(\cdot, +, =, <, 0)$

b) *there exists a quadratic polynomial with two opposite roots* $(\cdot, +, =, <, 0)$

2. Prove or disprove $(A \setminus C) \cup (B \setminus C) \cup (A \cap C) = (A \cup B) \setminus (B \setminus C)$

3. For what numbers $x \in \mathbb{N}$ the following holds.

$$\{\{3, x\}, \{5, x, 8\}\} \subseteq \{\{3\}, \{3, 7\}, \{3, 9\}, \{8, 9\}, \{5, 8\}, \{3, 5, 8\}, \{3, 8\}, \{5, 7, 8\}\}$$

4. Prove or disprove $(A \setminus B) \div (C \setminus B) = (A \div C) \setminus B$

1. Write the mathematical formulas corresponding to the following statements with the help of the following signs only: propositional connectives, quantifiers, variables varying through set $\mathbb{R}$ and symbols indicated in brackets

a) *every real number has exactly two square roots* $(\cdot, +, =, <, 0)$

b) *there exists a cubic polynomial with exactly one or three roots* $(\cdot, +, =, <, 0)$

2. Prove or disprove $(C \setminus A) \cup (B \setminus A) \cup (A \cap C) = (C \cup B) \setminus (B \setminus A)$

3. For what numbers $x \in \mathbb{N}$ the following holds.

$\{\{5, x\}, \{3, x, 8\}\} \subseteq \{\{5\}, \{5, 7\}, \{5, 9\}, \{8, 9\}, \{3, 8\}, \{3, 5, 8\}, \{5, 8\}, \{3, 7, 8\}\}$

4. Prove or disprove $(A \cup B) \div (C \cup B) = (A \div C) \setminus B$