

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

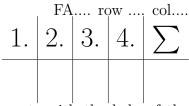
there exists a quadratic polynomial with two roots that are both positive or both $negative(\cdot, +, =, <, 0)$

2. For what numbers $x \in \mathbb{N}$ the following holds. $\{\{3, x\}, \{5, x, 8\} \subseteq \{\{3\}, \{5, 8\}, \{3, 5, 8\}, \{3, 8\}, \{3, 5, 9\}\}$ 3.Find: $\bigcap_{i \in \mathbb{N}_+} [1 + \frac{1}{2i}, 5 - \frac{1}{i}) \times [1 - \frac{1}{2i}, 5 - \frac{1}{i}] =$ $\left(\bigcup_{i \in \mathbb{N}_+} [1 + \frac{1}{2i}, 5 - \frac{1}{i})\right) \times \left(\bigcup_{i \in \mathbb{N}_+} [1 - \frac{1}{2i}, 5 - \frac{1}{i}]\right) =$ 4. Prove or disprove

a) $[(A \cup B) \div C] \setminus (B \setminus A) = (A \setminus C) \cup [C \setminus (A \cup B)]$

b) $(A \cup B) \div (C \cup B) = (A \div C) \cup B$

Name



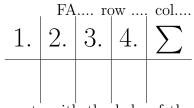
1. Write the mathematical formulas corresponding to the following statements with the help of the following signs only: propositional connectives, quantifiers, variables varying through set \mathbb{R} and symbols indicated in brackets

there exists a quadratic polynomial with two roots of different ${\rm signs}(\cdot,+,=,<,0)$

2. For what numbers $x \in \mathbb{N}$ the following holds. $\{\{3, x\}, \{5, x, 8\} \subseteq \{\{3\}, \{5, 8\}, \{3, 5, 8\}, \{3, 5\}, \{3, 5, 9\}\}$ 3.Find: $\bigcap_{i \in \mathbb{N}_+} [1 - \frac{1}{3i}, 5 - \frac{1}{i}) \times [1 + \frac{1}{3i}, 5 - \frac{1}{i}] =$ $\left(\bigcup_{i \in \mathbb{N}_+} [1 - \frac{1}{3i}, 5 - \frac{1}{i})\right) \times \left(\bigcup_{i \in \mathbb{N}_+} [1 + \frac{1}{3i}, 5 - \frac{1}{i}]\right) =$ 4. Prove or disprove

a) $(A \cup B) \div (B \cup C) = (A \div C) \setminus B$

b) $[(A \div B) \cup C] \setminus (B \setminus A) = (A \setminus C) \cup [C \setminus (A \cup B)]$



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

there exists a quadratic polynomial with no negative $\operatorname{roots}(\cdot,+,=,<,0)$

2. For what numbers $x \in \mathbb{N}$ the following holds. $\{\{3, x\}, \{5, x\} \subseteq \{\{3\}, \{5, 8\}, \{3, 5, 8\}, \{3, 5\}, \{3, 5\}, \{3, 5, 9\}\}$ 3.Find:

$$\begin{split} &\bigcap_{i\in\mathbb{N}_{+}} \left[1+\frac{1}{2i}, 5+\frac{1}{2i}\right) \times \left[1-\frac{1}{2i}, 5+\frac{1}{2i}\right] = \\ &\left(\bigcup_{i\in\mathbb{N}_{+}} \left[1+\frac{1}{2i}, 5+\frac{1}{2i}\right)\right) \times \left(\bigcup_{i\in\mathbb{N}_{+}} \left[1-\frac{1}{2i}, 5+\frac{1}{2i}\right]\right) = \end{split}$$

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

b) $[(A \div B) \cup C] = [(A \cup C) \setminus B] \cup [(B \cup C) \setminus A]$