Mathematics Preparatory Course - MSc in EEBL

Set Theory

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Exercises

1. Given $A = \{2, 5, 7, 8\}$ and $B = \{1, 5, 9, 10\}$, find $A \cup B$, $A \cap B$, $A \backslash B$ and $B \backslash A$

2. Given $A = \{0, 1, 2, 3, 4\}$ and $B = \{2, 3, 5\}$, find $A \cup B$, $A \cap B$, $A \backslash B$ and $B \backslash A$

3. $A = \{2, 3, 7\}$, $B = \{1, 2, 5, 7\}$ find $A \cup B$, $A \cap B$, $A \backslash B$, $B \backslash A$

4. is $(A \backslash B) \cup B = A$ True or False?

5. is $(A \cup B) \backslash B = A$ True or False?

6. List the elements of the following sets:

   - $A = \{x \in \mathbb{Q} | x = \frac{1}{2k}, k \in \mathbb{N}\}$

   - $B = \{x \in \mathbb{Q} | x = \frac{n}{n+1}, n \in \mathbb{N}\}$

   - $X = \{x \in \mathbb{N} | 3x - 10 \geq 0\}$

   - $X = \{x \in \mathbb{Z} | x^2 > 16\}$ and $Y = \{x \in \mathbb{N} | x^2 > 16\}$