Assignment 6

Due on 2019-09-14, 23:59 GMT

1. Let \( A = \{1, 2, 3, 4, 5\} \) and \( B = \{6, 7, 8, 9, 10\} \). Find the union of the following sets:
   \[ (A \cup B) = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\} \]

2. Let \( x, y \in \mathbb{R} \). Find the intersection of the following sets:
   \[ (A \cap B) = \{3, 4\} \]

3. Let \( A = \{1, 2, 3\} \) and \( B = \{4, 5, 6\} \). Find the symmetric difference of the following sets:
   \[ (A \Delta B) = \{4, 5, 6\} \]

4. Let \( x, y \in \mathbb{R} \). Find the subset of the following sets:
   \[ (A \subseteq B) = \{1, 2\} \]

5. Let \( A = \{1, 2, 3\} \) and \( B = \{4, 5, 6\} \). Find the complement of the following sets:
   \[ (A^c) = \{4, 5, 6\} \]

6. Let \( A = \{1, 2, 3\} \) and \( B = \{4, 5, 6\} \). Find the power set of the following sets:
   \[ \mathcal{P}(A) = \{\emptyset, \{1\}, \{2\}, \{3\}, \{1, 2\}, \{1, 3\}, \{2, 3\}, \{1, 2, 3\}\} \]

7. Let \( A = \{1, 2, 3\} \) and \( B = \{4, 5, 6\} \). Find the Cartesian product of the following sets:
   \[ A \times B = \{(1, 4), (1, 5), (1, 6), (2, 4), (2, 5), (2, 6), (3, 4), (3, 5), (3, 6)\} \]

8. Let \( A = \{1, 2, 3\} \) and \( B = \{4, 5, 6\} \). Find the quotient set of the following sets:
   \[ A / B = \{1, 2, 3\} \]

9. Let \( A = \{1, 2, 3\} \) and \( B = \{4, 5, 6\} \). Find the disjunction of the following sets:
   \[ A \lor B = \{1, 2, 3, 4, 5, 6\} \]

10. Let \( A = \{1, 2, 3\} \) and \( B = \{4, 5, 6\} \). Find the conjunction of the following sets:
    \[ A \land B = \{1, 2, 3, 4, 5, 6\} \]

11. Let \( A = \{1, 2, 3\} \) and \( B = \{4, 5, 6\} \). Find the implication of the following sets:
    \[ A \rightarrow B = \{1, 2, 3, 4, 5, 6\} \]

12. Let \( A = \{1, 2, 3\} \) and \( B = \{4, 5, 6\} \). Find the equivalence of the following sets:
    \[ A \equiv B = \{1, 2, 3, 4, 5, 6\} \]