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Boolean Properties of Sets — Requirements

Library Committee
Association of Mizar Users

Summary. This article contains proofs of the theorems which are obvious if the directive 'requirements BOOLE;' will be added to enviroment declaration of the Mizar article.

MML Identifier: BOOLE.

WWW: http://mizar.org/JFM/Vol-3/boole.html

One can prove the following propositions:

(1) For every set X holds $X \cup \emptyset = X$.

(2) For every set X holds $X \cap \emptyset = \emptyset$.

(3) For every set X holds $X \setminus \emptyset = X$.

(4) For every set X holds $\emptyset \setminus X = \emptyset$.

(5) For every set X holds $X \dot{-} \emptyset = X$.

(6) For every set X such that X is empty holds $X = \emptyset$.

(7) For all sets x, X such that $x \in X$ holds X is non empty.

(8) For all sets X, Y such that X is empty and $X \neq Y$ holds Y is non empty.

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