Math 117: Sets

Let A and B be sets. Complete the following definitions.

A is a **subset** of B (_____) iff _____

iff _____

A **equals** B (_____) iff _____

iff _____ iff _____

The **union** of A and B is the set _____ $= \{x :$ _____ $\}$

The **intersection** of A and B is the set _____ $= \{x :$ _____ $\}$

The **compliment** of B in A is the set _____ $= \{x :$ _____ $\}$

A and B are **disjoint** iff _____ iff _____

Let $A = \{2, \{3\}, 5\}$, $B = \{2, \{3, 5\}\}$, $C = \{\{2\}, \{3\}, \{5\}\}$. Are the following statements true or false?

$2 \in A$	_____	$3 \in A$	_____	$\{2, 5\} \subseteq A$	_____
$2 \in C$	_____	$3 \in B$	_____	$\{3, 5\} \subseteq B$	_____
$\{2\} \subseteq A$	_____	$\{3\} \subseteq A$	_____	$\{3, 5\} \subseteq C$	_____
$\{2\} \subseteq C$	_____	$\{3\} \subseteq B$	_____	$\{2, 3, 5\} \in C$	_____

Find the sets described by the unions, intersections, and compliments below.

$A \cup B =$	_____	$A \cap B =$	_____	$A \setminus B =$	_____
$A \cup C =$	_____	$A \cap C =$	_____	$B \setminus A =$	_____
$B \cup C =$	_____	$B \cap C =$	_____	$C \setminus B =$	_____