Solve the following problems and hand in your solutions.

(1) - (9) From the book: 3.7, 3.8, 3.9, 3.10, 3.11, 3.23, 3.26, 3.47, 3.55.

(10) Let $A$, $B$ and $C$ be sets in $\mathbb{R}$.

(a) Give the definitions of $A \cup B$ and $B - A$.

(b) Is $A \cap (B \cup C) = (A \cap B) \cup C$ true? If so, give a proof. If it is false in general, give an example of sets $A$, $B$ and $C$ which do not satisfy the equality.