Math 122 In-Class Assignment 6 - Solutions

1. Find the following set operations for the sets $A = \{w, x, y, z\}$, $B = \{t, u, v, x, z\}$, and $C = \{u, v, w, x\}$ that exist in the universe $\mathcal{U} = \{s, t, u, v, w, x, y, z\}$.

   (a) $A \cup B = \{t, u, v, w, x, y, z\}$

   (b) $A \cap B = \{x, z\}$

   (c) $A \backslash B = \{w, y\}$

   (d) $A \oplus B = (A \backslash B) \cup (B \backslash A) = \{w, y\} \cup \{t, u, v\} = \{t, u, v, w, y\}$

   (e) $A^c \cap B^c = \{s, t, u, v\} \cap \{s, w, y\} = \{s\}$

   (f) $A \backslash (B \backslash C) = \{w, x, y, z\} \backslash \{t, z\} = \{w, x, y\}$

   (g) $A \cup (B \cap C) = \{w, x, y, z\} \cup \{u, v, x\} = \{u, v, w, x, y, z\}$