

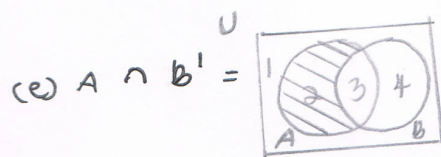
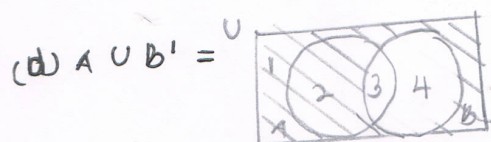
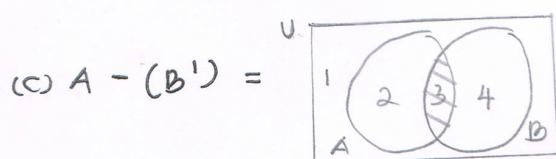
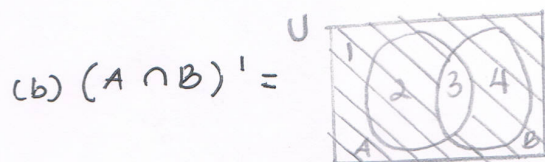
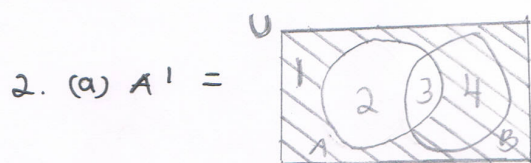
Tutorial 1: Set Operations

1. (a) $(X \cup Y)' = \{0, 6, 7\}$

(b) $X' \cup Y' = \{0, 1, 2, 3, 5, 6, 7\}$

(c) $X \cup (Y \cap Z) = \{2, 3, 4, 5\}$

(d) $(X \cup Y) \cap Z = \{2, 5\}$



3. (a) List subset $X = \{\{a, b, c\} \subseteq X\}$ ✖

(b) $X \times Y = (\{a, b, c\} \times \{1, 2\})$

$= \{\{a_1, a_2, b_1, b_2, c_1, c_2\} \in (X \times Y)\}$ ✖

4.

$$(a) \{a, b, \{a, b\}, \{\{a, b\}\}\} - \{a, b\}$$

$$= \{a, b, \{\{a, b\}\}\} *$$

$$(b) \cup \{\{a\}, \{a, b\}, \cap \{\{c, d\}, \{a, e, f\}\}\}$$

$$= \{a\}, \{a, b\} \cap \{\{c, d\}, \{a, e, f\}\}$$

$$= \emptyset *$$

$$(c) 2^{\{1, 2\}} - 2^{\{1, 3\}}$$

$$= \{\emptyset, \{1\}, \{2\}, \{1, 2\}\} - \{\emptyset, \{1\}, \{3\}, \{1, 3\}\}$$

$$= \{\{2\}, \{3\}, \{1, 2\}, \{1, 3\}\} *$$

$$(d) 2^{\{a, b\}} \times \{a, b\}$$

$$= \{\emptyset, \{a\}, \{b\}, \{a, b\}\} \times \{a, b\}$$

$$= \{\emptyset, \{a, a\}, \{a, b\}, \{b, a\}, \{b, b\}\}, \{a, a\}, \{a, b\}, \{b, a\}, \{b, b\}\}$$

$$= \{\emptyset, \{a, a\}, \{a, b\}, \{b, a\}, \{b, b\}\} *$$

$$(e) \{1\} \times \{1, 2\} \times \{1, 3\}$$

$$= \{\{1, 1\}, \{1, 2\}\} \times \{1, 3\}$$

$$= \{\{1, 1\}, \{1, 3\}, \{1, 1\}, \{1, 3\}, \{1, 1\}, \{1, 3\}, \{2, 1\}, \{2, 3\}\} *$$

$$= \{\{1, 1\}, \{1, 3\}, \{2, 1\}, \{2, 3\}\} *$$

$$5. \{\emptyset, \{\emptyset\}, \{\emptyset, \emptyset\}, \{\emptyset, \{\emptyset\}\}, \{\emptyset, \{\emptyset, \emptyset\}, \{\emptyset\}, \{\emptyset, \{\emptyset\}\}\}\}$$

$$= 5 *$$