CS 278 HW 8

3.3.1 b) $A \cap B = \{1, 4\}$

f) $A \cup C = \{4, 0, x \in \mathbb{Z} : x \text{ is odd}\}$

g) $(A \cup B) \cap C = \{-5, -3, 1, 17\}$

h) $A \cup (C \cap D) = \{-3, 0, 1, 4, 17\}$

3.3.2 b) $\left(\bigcup_{i=2}^{5} A_i\right) \cap \{x \in \mathbb{Z} : 1 \leq x \leq 20\}$

$= \{2, 3, 4, 5, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20\}$

The set of all positive multiples of: 2, 3, 4, 5 that is ≤ 20

3.3.3 b) $\bigcup_{i=2}^{5} A_i$, $A_i = \{i^0, i^1, i^2\}$

$= \{1, 2, 4, 3, 9, 16, 5, 25\}$

d) $\bigcup_{i=1}^{100} B_i$ $B_i = \{x \in \mathbb{R} : -i \leq x \leq 1/i\}$

$= \{x \in \mathbb{R} : -100 \leq x \leq 1\}$

e) $\bigcap_{i=1}^{100} C_i$ $C_i = \{x \in \mathbb{R} : -1/i \leq 1/i\}$

$= \{x \in \mathbb{R} : -1/100 \leq x \leq 1/100\}$

3.3.4 b) $P(A \cup B)$ $A = \{a, b\}$

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

$\{a,b\}, \{a,c\},$

$\{b,c\}, \{a,b,c\}\}$

d) $P(A) \cup P(B)$

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