

MATH 1500/MATH1551

Section 5.1 HW Solutions: 1, 3, 5, 7, 13

1. a. $S' = \{5, 6, 7\}$
 b. $S \cup T = \{1, 2, 3, 4, 5, 7\}$
 c. $S \cap T = \{1, 3\}$
 d. $S' \cap T = \{5, 7\}$
3. a. $R \cup S = \{a, b, c, e, i, o, u\}$
 b. $R \cap S = \{a\}$
 c. $S \cap T = \emptyset$
 d. $S' \cap R = \{b, c\}$
5. $\emptyset, \{1\}, \{2\}, \{1, 2\}$
7. a. $F \cap B = \{\text{all freshman college students who like basketball}\}$
 b. $B' = \{\text{all college students who do not like basketball}\}$
 c. $F' \cap B' = \{\text{all college students who are neither freshman nor like basketball}\}$
 d. $F \cup B = \{\text{all college students who are either freshman or like basketball}\}$
13. a. $R \cup S = \{a, b, c, d\}$
 $(R \cup S)' = \{e, f\}$
 b. $R \cup S \cup T = \{a, b, c, d, e, f\}$
 c. $R \cap S = \{a, b\}$
 $R \cap S \cap T = (R \cap S) \cap T = \emptyset$
 d. $T' = \{a, b, c, d\}$
 $R \cap S \cap T' = (R \cap S) \cap T' = \{a, b\}$
 e. $R' = \{d, e, f\}; S \cap T = \emptyset$
 $R' \cap S \cap T = R' \cap (S \cap T) = \emptyset$
 f. $S \cup T = \{a, b, d, e, f\}$
 g. $R \cup S = \{a, b, c, d\};$
 $R \cup T = \{a, b, c, e, f\}$
 $(R \cup S) \cap (R \cup T) = \{a, b, c\}$
 h. $R \cap S = \{a, b\}; R \cap T = \emptyset$
 $(R \cap S) \cup (R \cap T) = \{a, b\}$
 i. $R' = \{d, e, f\}; T' = \{a, b, c, d\}$
 $R' \cap T' = \{d\}$