MATH 1500/MATH1551
Section 5.2 HW Solutions: 1, 3, 5, 9, 15, 17, 29

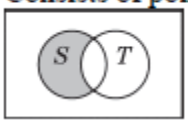
1. $n(S \cup T) = n(S) + n(T) - n(S \cap T)$
$= 4 + 4 - 2 = 6$

3. $n(S \cup T) = n(S) + n(T) - n(S \cap T)$
$15 = 6 + 9 - n(S \cap T)$
$n(S \cap T) = 6 + 9 - 15 = 0$

5. $n(S \cup T) = n(S) + n(T) - n(S \cap T)$
$10 = n(S) + 7 - 5$
$n(S) = 10 - 7 + 5 = 8$

9. Let P = {adults in South America fluent in Portuguese} and
S = {adults in South America fluent in Spanish}.
Then $P \cup S$ = {adults in South America fluent in Portuguese or Spanish} and
$P \cap S$ = {adults in South America fluent in Portuguese and Spanish}.
$n(P) = 170$, $n(S) = 155$,
$n(P \cup S) = 314$ (numbers in millions)
$n(P \cup S) = n(P) + n(S) - n(P \cap S)$
$314 = 170 + 155 - n(P \cap S)$
$n(P \cap S) = 170 + 155 - 314 = 11$
11 million are fluent in both languages.

15. Consists of points not in T but in S.



17. Consists of points in T or not in S.

29. Consists of points in R or points in both S and T.