

Solutions to Math 106-016 Test #1

1. (a) Deductive (b) Inductive

2. $1\frac{1}{13}$

3.
$$\begin{array}{r} 3 \quad 14 \quad 31 \quad 54 \quad 83 \quad 118 \quad 159 \\ 11 \quad 17 \quad 23 \quad 29 \quad 35 \quad 41 \\ 6 \quad 6 \quad 6 \quad 6 \quad 6 \end{array}$$

4. $\frac{500}{2}(500+1) = 125,250$

5. $90^2 = 8100$

6. (a) TRUE (b) FALSE

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

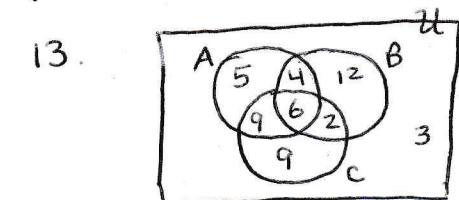
8. They are the same

9. $X \cap Y = \{a, c\}$ $Y - Z = \{a\}$
 $Y \cup Z = \{a, b, c, d, e, f\}$ $X' \cap Z = \{b, d, f\}$
 $X \cup (Y \cap Z) = \{a, b, c, e, g\}$ $W \times Y = \{(c, a), (c, b), (c, c), (d, a), (d, b), (d, c)\}$

10. $(A \cap B)' = A' \cup B'$ $(A \cup B)' = A' \cap B'$

11. $(A \cap C) \cup (A \cap B)$

12. $20 + 60 - 30 = 50$



14. "There is someone who does not love a woman"

15. "I am going and she is not going"

16.
$$\begin{array}{ccc} PVQ & \sim P \wedge Q & Q \rightarrow \sim P \\ \hline T & F & F \\ T & F & T \\ T & T & T \\ F & F & T \end{array}$$

17. "If there is fire, then there is smoke"
 "If there is no smoke, then there is no fire"
 "If there is no fire, then there is no smoke"

18. "The singer hits the high note and she does not shatter the glass"