清華大學 TSINGHUA UNIVERSITY 数学作业纸

班级：计23 姓名：郑东森 编号：2022010799 科目：离散数学(1) 第 1 页

1.(4). $A_4=\{\{-2,0\},\{-2,1\},\{-2,2\},\{-1,0\},\{-1,1\},\{-1,2\},$
$\{0\}\{0,1\},\{0,2\},\{1\},\{1,2\}\}$.

2.(4). $A=\{x \mid x=2n+1 \wedge n\in N^*\}$. -0.5 审题，质数

3. $A=\varnothing$, $B=\{\varnothing\}$, $C=\{\{\varnothing\}\}$

4. $A=\varnothing$, $B=\{\varnothing\}$, $C=\{\{\varnothing\},\varnothing\}$.

6.(2) 假，$A=\{\varnothing\}$, $B=C=\{\{\varnothing\}\}$

(4) 假，$A=\varnothing$, $B=\{\varnothing\}$, $C=\{\varnothing,\{\{\varnothing\}\}\}$.

7.(1) $P(\{a,\{a\}\})=\{\varnothing,\{a\},\{\{a\}\},\{a,\{a\}\}\}$

(3) $P(\{\varnothing,a,\{b\}\})=\{\varnothing,\{\varnothing\},\{a\},\{\{b\}\},\{\varnothing,a\},\{\varnothing,\{b\}\},\{a,\{b\}\},$
$\{\varnothing,a,\{b\}\}\}$

(5) $P(P(\varnothing))\times P(P(\varnothing))$
$=P(\{\varnothing\})\times P(\{\varnothing\})$
$=\{\varnothing,\{\varnothing\}\}\times\{\varnothing,\{\varnothing\}\}$
$=\{\langle\varnothing,\varnothing\rangle,\langle\varnothing,\{\varnothing\}\rangle,\langle\{\varnothing\},\varnothing\rangle,\langle\{\varnothing\},\{\varnothing\}\rangle\}$
~~$=\{\{\varnothing\},\{\varnothing,\{\varnothing\}\},\{\{\varnothing\}\},\{\{\varnothing\},\{\varnothing\}\}\}$~~.

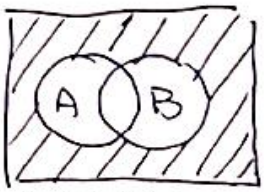
8. $B=P(P(P(\varnothing)))$
$=P(P(\{\varnothing\}))$
$=P(\{\varnothing,\{\varnothing\}\})$
$=\{\varnothing,\{\varnothing\},\{\{\varnothing\}\},\{\varnothing,\{\varnothing\}\}\}$

(1) $\varnothing\in B$, $\varnothing\subseteq B$.

(2) $\{\varnothing\}\in B$, $\{\varnothing\}\subseteq B$.

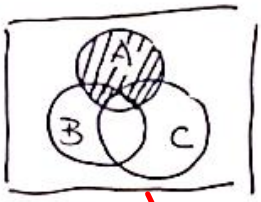
(3) $\{\{\varnothing\}\}\in B$, $\{\{\varnothing\}\}\subseteq B$

9.(1)



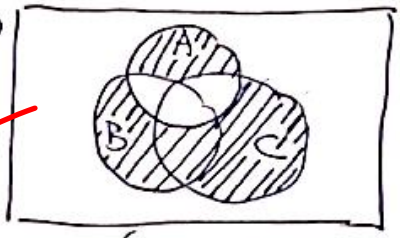

$(-A)\cap(-B)$

(2)




$A\cap(-B\cup-C)$

(3)




$A\oplus(B\cup C)$

10.(1) $(B\cap C)-A$ (2) $(-(A\cup B\cup C))\cup(A\cap B\cap C)$

11.(2) $\{\emptyset,\{\emptyset\}\}-\emptyset=\{\emptyset,\{\emptyset\}\}$.

(4) $\{\emptyset,\{\emptyset\}\}-\{\{\emptyset\}\}=\{\emptyset\}$.

12.(1) $A\cap-B=\{1,4\}\cap-\{1,2,5\}$

$=\{1,4\}\cap\{3,4\}$

$=\{4\}$.

(3) $-(A\cap B)=-(\{1,4\}\cap\{1,2,5\})$

$=-\{1\}$

$=\{2,3,4,5\}$.

(4) $P(A)-P(B)=P(\{1,4\})-P(\{1,2,5\})$

$=\{\emptyset,\{1\},\{4\},\{1,4\}\}-\{\emptyset,\{1\},\{2\},\{5\},\{1,2\},\{2,5\},\{1,5\},\{1,2,5\}\}$.

$=\{\{4\},\{1,4\}\}$.