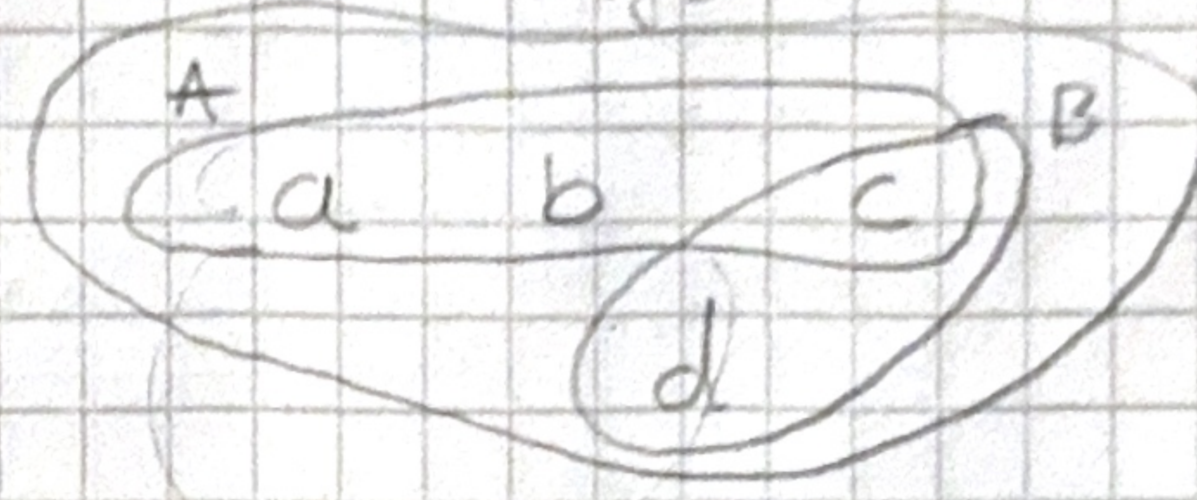
Oblig 2

oppgave 2.1.4

$A = \{\underbrace{a,b,c}_{\text{Finnes i C}}\}$ $\quad B = \{\underbrace{c,d}_{\text{Finnes i C}}\}$ $\quad C = \{\underbrace{a,b,c,d}_{\text{Finnes i A og B}}\}$

$A \subseteq C$ og $B \subseteq C \rightarrow$



oppgave 2.1.5

a, c, e, i

oppgave 2.2.1

a) $A \cup B \iff A + B \iff \{1,2,3,4,5\}$

b) $A \cap B = \{3,4\}$

c) $A - B = \{1,2\}$

d) $B - A = \{5\}$

oppgave 2.3.1 a

$A = \{1,2,3\}$ $\quad B = \{a,b\}$

$A \times B = (\{1,a\},\{1,b\},\{2,a\},\{2,b\},\{3,a\},\{3,b\})$

oppgave 2.2.2

a) $A \cup B = \{1,2,3,4\} \rightarrow AB \cap C = \{1,2\}$

b) $\underbrace{A}_{\{1,2,3,4\}} \cup (\underbrace{B \cap C}_{\text{ingenting}}) = \{1,2,3,4\}$

c) $\bar{A} \cap C = \{7\}$

d) $\overline{(A \cup C)} \cap B = \{5\}$

e) $\underbrace{(A \cup B)}_{1-5} - \underbrace{C}_{1,2,7} = \{3,4,5\}$

f) $(\underbrace{\bar{C}}_{1,2,7} - \underbrace{B}_{3,4,5}) - \underbrace{A}_{1,2,3,4} \rightarrow \underbrace{B}_{3,4,5} - \underbrace{A}_{3,4,5} = \{3,4,5\} - \{3,4,5\} = \{\ \} \iff \{\emptyset\}$

Oblig 2

oppgave 1

Alle mengdene er like

oppgave 2

a) $A = \{1,3,5,7,9\}$

b) $B = \{-2,-1,0,1,2\}$

c) $C =$ partall $\rightarrow 1+(-1)^2 = 1+1 = 2 \Rightarrow \underline{\underline{C = \{0,2\}}}$
oddetall $\rightarrow 1+(-1)^1 = 1-1 = 0$

d) $D = \underbrace{x \leq 0}_{\{\ldots -3,-2,-1,0\}} \cup \underbrace{x > 6}_{\{7,8,9\ldots\}} \Rightarrow \underline{\underline{D = \{\ldots -3,-2,-1,0,7,8,9\ldots\}}}$

oppgave 3

a) $A \cup \emptyset = A = \underline{\underline{\{0\}}}$ ← A trumfer den tomme mengde

b) $A \cup B = \underline{\underline{\{0,1,2,3\}}}$

c) $|A|$ = Elementer i A $= \underline{\underline{1}}$

d) $|B| = \underline{\underline{3}}$

e) $|B \cup C| = \underbrace{\{1,2,3,5\}}_{4} = \underline{\underline{4}}$

f) $\overline{B \cap C} = \overline{B} \cup \overline{C} = \cancel{1,2,3} \cup \cancel{2,3,5} + U = \underline{\underline{\{0,1,4,5,6,7,8,9\}}}$
Morgans lov

g) $P(C) = 2^3 = \underline{\underline{8}}$ ← Antall potensmengder
$P(C) = \{\{2\},\{3\},\{5\},\{2,3\},\{2,5\},\{3,5\},\{\ \},C\}$

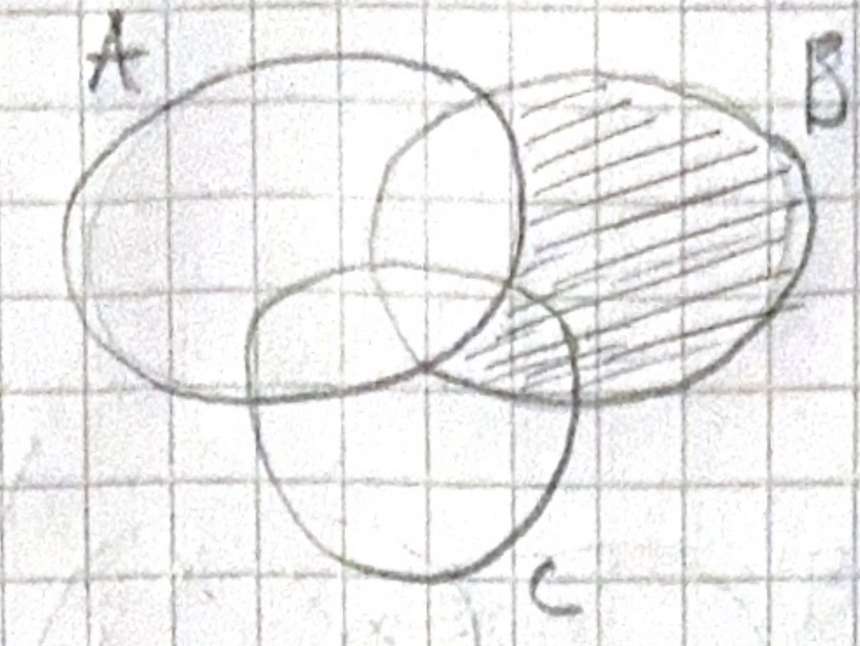
← Antall kartesiske produkter

h) $B \times C = 3 \cdot 3 = \underline{\underline{9}}$
$B \times C = \{(1,2),(1,3),(1,5),(2,2),(2,3),(2,5),(3,2),(3,3),(3,5)\}$

Oblig 2

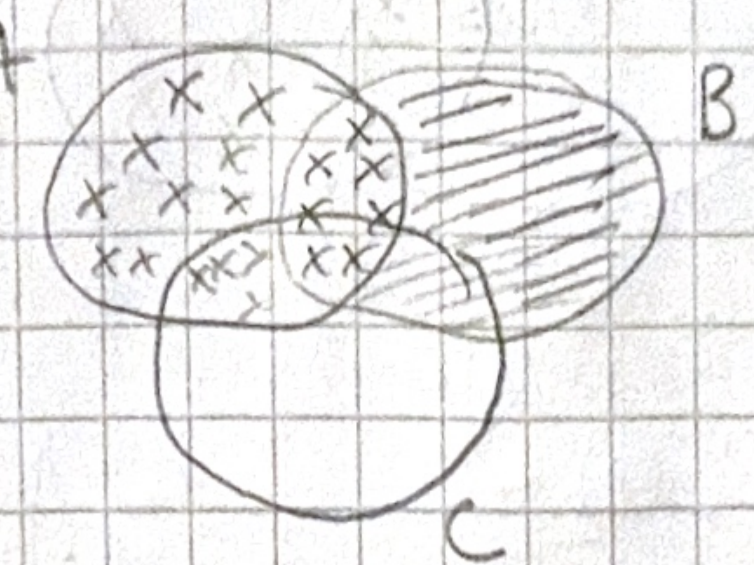
oppgave 4

a) $B - A$

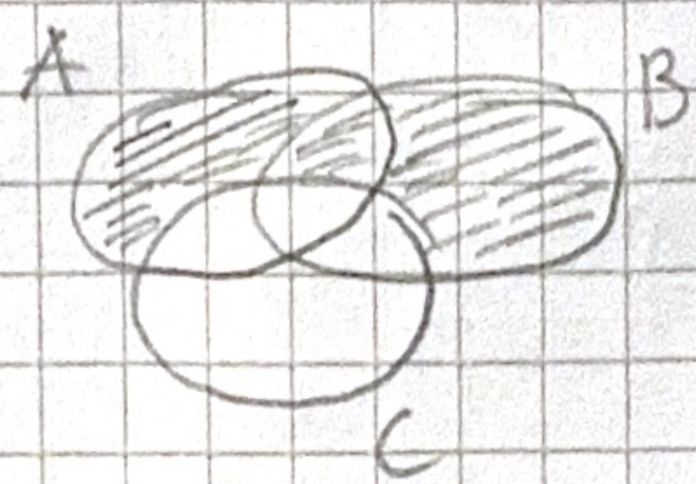


Samme resultat

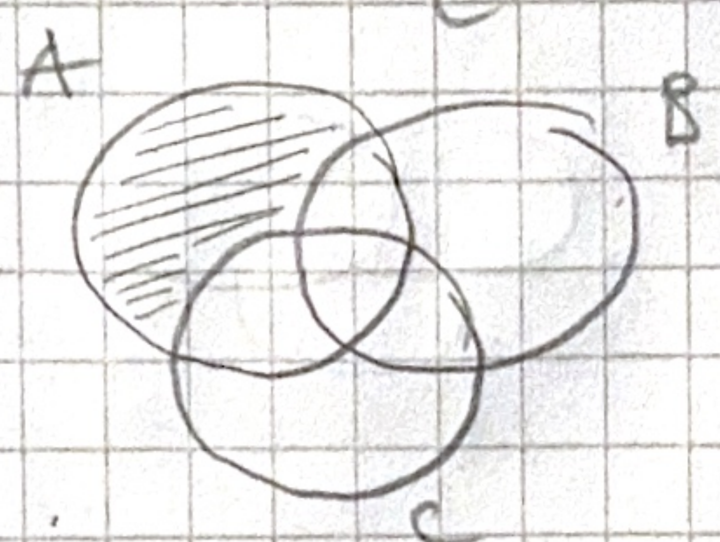
b) $\overline{A} \cap B$



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

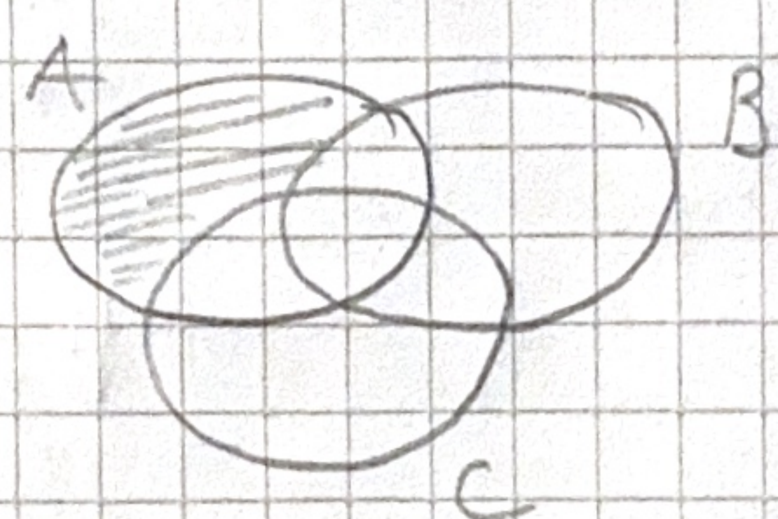


d) $A - (B \cup C)$

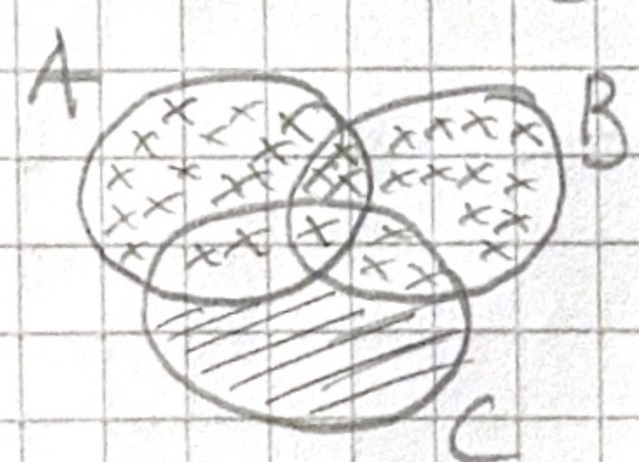


Samme resultat

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



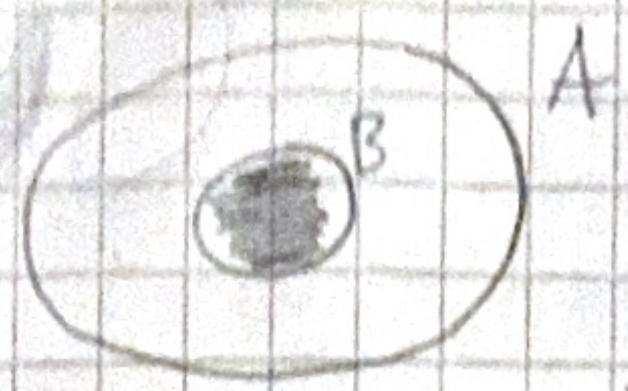
f) $\overline{A} \cap \overline{B} \cap C$



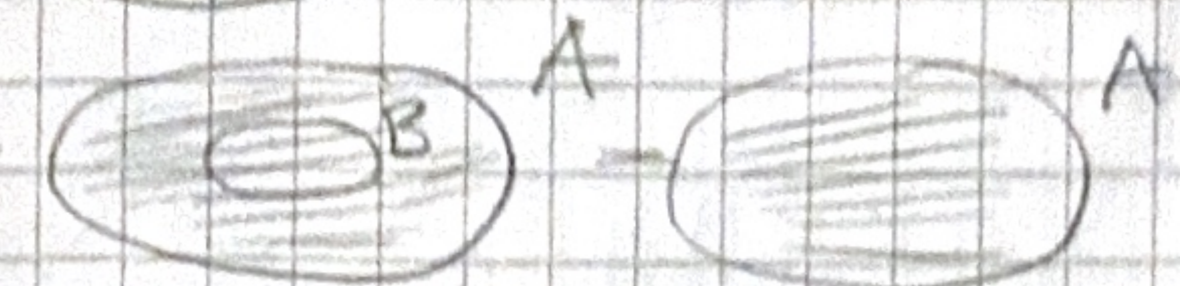
Oblig 2

$\boxed{\text{Oppgave 5}}$

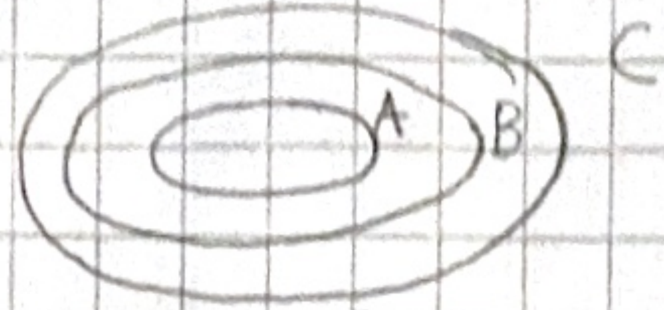
a) $B \subseteq A$, $A \cap B = B$ $\longrightarrow$



b) $B \subseteq A$, $A \cup B = A$ $\longrightarrow$



c) $A \subseteq B$ og $B \subseteq C$, Er $A \subseteq C$?



a) Siden B er en delmengde i A, er alle elementene i B også i A. Når vi da skal ha snittet mellom A og B, blir det, det samme som å skrive mengden B fordi disse er felleselementer.

b) Siden B er en delmengde i A, er alle elementene i B også i A. Når vi da skal ha unionen mellom A og B, blir det, det samme som å skrive mengden A, ettersom A inneholder alle verdiene.

c) Siden alle elementene til B finnes i C, og alle elementene til A finnes i B, må også alle elementene i A finnes i C

$\boxed{\text{Oppgave 6}}$ $- A \cap \underbrace{(B-A)}_{\overline{A}} \Leftrightarrow \underbrace{A \cap \overline{A}}_{\text{Inversloven}} = \emptyset = \{\ \}$

Siden $(B-A)$ er det samme som $\overline{A}$, betyr det at det står $A \cap \overline{A}$, som ifølge inversloven er mengden "$\emptyset$". Dette stemmer, ettersom $(B-A)$ ikke inneholder elementer i A, og dermed blir snittet mellom A og $\overline{A}$ ingenting.