

Astab 1.
2025.09.10.

a	b	$a \leftrightarrow b$	$\overbrace{a \wedge b}^A$	$\overbrace{(a) \wedge (\neg b)}^B$	$A \vee B$
i	i	i	i	i	i
i	h	h	h	h	h
h	i	h	h	h	h
h	h	i	h	i	i

a	b	$a \rightarrow b$	$\neg a \vee b$
i	i	i	i
i	h	h	h
h	i	i	i
h	h	i	i

$$\begin{cases} ((a \wedge b \wedge c)) \rightarrow d = \neg(a \wedge b \wedge c) \vee d = \neg a \vee \neg b \vee \neg c \vee d \\ a \rightarrow (b \rightarrow (c \rightarrow a)) = \neg a \vee (\neg b \vee (\neg c \vee d)) \end{cases}$$

$$\neg(((a \wedge b) \vee c) \rightarrow a) \Leftrightarrow b = *$$

$$(a \vee b \vee \neg c) \wedge (a \vee \neg b \vee c) \wedge (a \wedge \neg b)$$

$$\begin{aligned} * &= \cancel{\neg(((a \wedge b) \vee c) \vee a)} \Leftrightarrow b = \cancel{((a \wedge b) \vee c \wedge \neg a \wedge b)} \vee \\ &\quad \vee \cancel{((\neg(a \wedge b) \wedge \neg c \vee a) \wedge \neg b)} = \cancel{(a \wedge b) \vee c} \wedge \cancel{\neg a \wedge b} \vee \\ &\quad \vee \cancel{(a \vee b) \wedge \cancel{\neg c \vee a} \wedge \neg b} = \cancel{(a \vee c) \vee (b \wedge c) \wedge \neg a \wedge b} \vee \\ &\quad \vee \cancel{(a \wedge \neg c) \vee (\neg b \wedge \neg c) \vee a} \end{aligned}$$

a	b	c	A	B
i	i	i	h	
h	i	i	i	
i	h	i	i	
h	h	i	h	
i	i	h	h	
a	i	h	h	
i	a	h	i	
h	a	h	i	

Minden medve szereti a mezeit. \forall mezeikhez \exists medvek, hogy a
 \exists mezeit innék
 $\exists m \in M, \exists b \in B, \gamma s(b, m)$

Minden asszony életeben 3 pillanat, amikor díjat akart tenni,
amit nem szabad

$\psi(b, k)$ 60ba megijte a hosszét

$\forall h \in K, \exists b \in B, \psi(b, h)$

tag: $\exists h \in K, \forall b \in B, \neg \psi(b, h)$

$\exists h \in K, \forall b \in B, \psi(b, h) : \forall h \in K, \exists b \in B, \neg \psi(b, h)$

$\forall b \in B, \exists h \in K, \psi(b, h) : \exists b \in B, \forall h \in K, \neg \psi(b, h)$

$$(A \wedge B) \rightarrow (C \vee D) = (\neg A \vee \neg B) \vee C \vee D$$

$$(A \oplus B) \vee (C \wedge D) = \neg((A \wedge B) \vee (\neg A \wedge \neg B)) \vee (C \wedge D)$$

$$\neg((P \wedge Q) \vee (\neg P \wedge \neg Q)) \wedge (R \vee \neg(S \wedge T) \vee (\neg S \wedge \neg T)) \quad \Leftrightarrow \\ (P \wedge \neg Q) \vee (\neg P \wedge Q) \wedge (R \vee (S \wedge \neg T) \vee (\neg S \wedge T)) \quad \oplus$$

$$\neg(P \Rightarrow Q) = P \oplus Q$$

2025.09.17.

gratulálok szeretlek
egy terv
 $\frac{1}{1}$ + 1 pont

$$\left(\bigcup_{i \in I} A_i \right) \cap \left(\bigcup_{j \in J} B_j \right) = \bigcup_{i \in I} \bigcup_{j \in J} (A_i \cap B_j)$$

$$\exists i \in I \exists j \in J : e \in A_i \wedge e \in B_j \quad \exists i \in I \forall j \in J : e \in A_i \cap B_j \rightarrow$$

$$\rightarrow \exists i \in I \exists j \in J : e \in A_i \cap B_j$$

C egy alaphalmaz

$$C - \bigcup_{i \in I} A_i = \bigcap_{i \in I} (C - A_i)$$

$$e \in C \wedge \forall i \in I : e \notin A_i \quad \forall i \in I : e \in C \wedge e \notin A_i$$

$$x \in \bigcap_{n=1}^{\infty} \bigcap_{k=n}^{\infty} A_k \iff x \text{ véges sok hivatalos } A_k - \text{ban benne van}$$

$$x \in \bigcap_{n=1}^{\infty} \bigcup_{k=n}^{\infty} A_k \iff x \text{ végtelen sok } A_k - \text{ban benne van}$$

\Rightarrow kontinuitás
 \Leftarrow

$$\exists i \in \{1, \dots, n\} \forall j \in \{k, \dots, n\} : x \in A_k$$

$$\forall k \in \{1, 2, \dots\} \exists j \in \{k, k+1, \dots\} : x \in A_j$$

\times hoz $H = \{0,1\}$ $p: H \times H \rightarrow H$ $p(a,b) = p(b,a)$ $A \subset X$

$A' = \{x \in X \mid \forall a \in A : p(x,a) = 1\}$

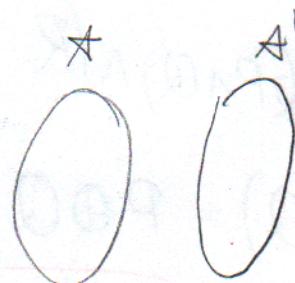
a) $\forall A, B \subset X$ $A \subset B \rightarrow B' \subset A'$

b) $\forall A \subset X$ $A \subset A''$

c) $A' = A'''$

d) $H = \mathbb{R}$

e) $H = \{1\}$



e) $X' = X$

a) $(x \in B \rightarrow x \in A) \rightarrow$

b) A' azon elemek, melyekhez p 1-et rendel

$$p(a', a) = 1$$

$$p(x, a'') = 1$$

a) $\star = U(\mathcal{P}(A))$

a2) $\cup B \subset A \Leftrightarrow B \subset \mathcal{P}(A) \Leftrightarrow B \in \mathcal{P}(\mathcal{P}(A))$

b) $\{x, y\} \in \star \rightarrow x, y \in U \star$

d) f fo $\text{Ran}(f), \text{Dom}(f) \in \mathcal{P}(U \cup A)$

c) $(x, y) \in A \rightarrow x, y \in U \cup A$

~~d) f fo. $\text{Ran}(f), \text{Dom}(f)$~~

e) $f: A \rightarrow B$

$f \in \mathcal{P}(\mathcal{P}(\mathcal{P}(A \cup B)))$

1) $A \text{ bz} \rightarrow \{A\}$

2) $A, B \text{ bz} \rightarrow \{A, B\}$

3) $A, B, C \text{ bz} \rightarrow \{A, B, C\}$

c) $(A \wedge \neg B) \vee (\neg A \wedge \neg C) \vee (B \wedge C) \vee (A \oplus C)$

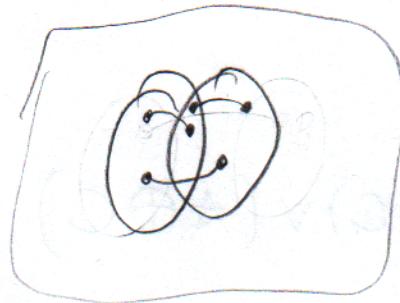
A	B	C	$A \wedge \neg B$	$\neg A \wedge \neg C$	$B \wedge C$	$A \oplus C$	
1	1	1	0	1	1	1	1
1	1	0	0	0	1	0	1
1	0	1	1	1	0	1	1
1	0	0	1	0	0	0	0
0	1	1	0	0	0	0	0
0	1	0	0	0	0	1	1
0	0	1	0	0	0	0	0
0	0	0	0	0	0	1	1

$(C \vee A)$	$(C \vee B)$	
1	1	
1	1	
1	0	
1	1	
1	0	
1	1	
0	0	

$\star B \subset X$

2025.09.24.

$$R[\star] \in B \hookrightarrow R^{-1}[X-B] \subset X-\star$$



$$R^{-1}[X-B] \subset X-\star \rightarrow$$

$$\exists x \in R^{-1}[X-B] \wedge x \notin X-\star \rightarrow x \in \star$$

\Rightarrow

$$\exists a \in R^{-1}[X]$$

$\cup \mathcal{H} \in \mathcal{K}$

$$\mathcal{H} \subset \mathcal{F}(A, B) \quad f: A \xrightarrow{\sim} B$$

$$h_1, h_2 \in \mathcal{H}, h_1 \cap h_2 \neq \emptyset \subset h_1$$

$\exists i \in I, h_i \in \mathcal{H}, x \in h_i$

a) $f = \cup \mathcal{H}$ függvény

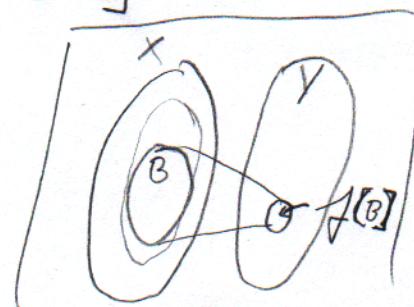
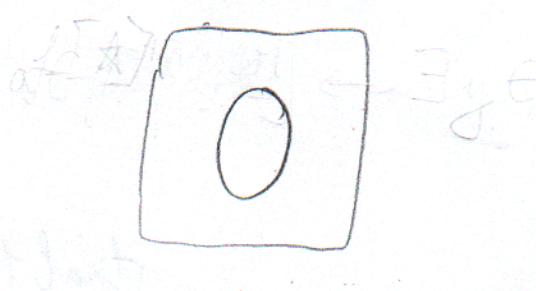
$$(a, c), (a, b) \in f \rightarrow \exists h_i, h_j \in \mathcal{H}: (a, c) \in h_i, (a, b) \in h_j \rightarrow$$

$$(h_i \subset h_j \rightarrow b \neq c) \vee (h_j \subset h_i \rightarrow b \neq c)$$

b) nézzél $(b, a), (c, a)$ -ra ugyanez

$$f: X \xrightarrow{\sim} Y \quad \star C X \rightarrow A \subset f^{-1}[f[\star]]$$

$$B \subset Y \rightarrow f[f^{-1}[B]] \subset B$$



f szüjchthető, akkor

$$x_n \leq y_n \Leftrightarrow (x_n - y_n \rightarrow 0) \vee (x_n < y_n \text{ finitán véges sok kivétellel})$$

i) \leq reflexív

ii) nem

iii) nem

iv) nem

$$\left(-1\right)^n + \frac{1}{n} \quad \left(-1\right)^n + \frac{1}{n^2}$$

$$1 + \frac{2}{n^2}$$

\mathbb{Q}

\mathbb{R}

\mathbb{Z}

nem Cauchy
 $(-2)^n \quad (-2)^{n+1}$

~~A~~ ~~B~~ ~~C~~ ~~D~~ ~~E~~

~~B~~ ~~d~~ ~~d~~