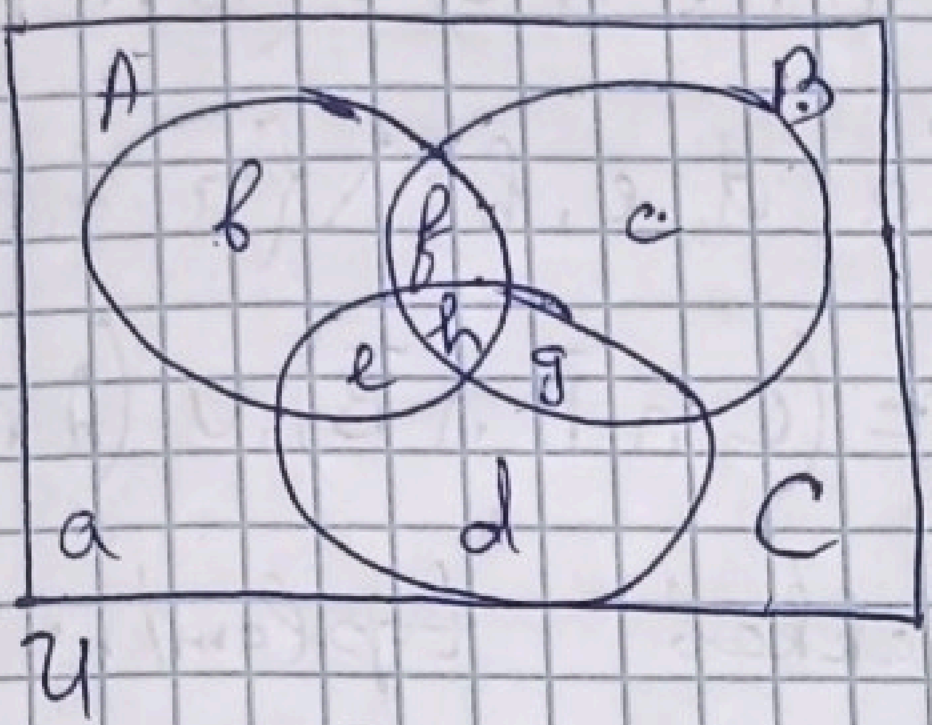
Toplamlar nazariyasi

$U=\{a, b, c, d, e, f, g, h\}$

1.1.25.



1) $X=\{b, c, f, g\}$ $\qquad \overline{X\cup Y}=$

$Y=\{d, e, f, g\}$.

$=$ ~~...~~, $\{a, h\}=$

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

2) $\overline{Y}=\{a, b, e, h\}=$

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

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

3) $\overline{X}\,\Delta\, Y=\{a, d, e, h\}\,\Delta\,\{d, e, f, g\}=$

$=\{a, f, g, h\}=$

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

4) $X \cap \overline{Y} = \{b, c, f, g\} \cap \{a, b, c, h\} =$

$= \{b, c\} = (A \cap \overline{B} \cap \overline{C}) \cup (B \cap \overline{A} \cap \overline{C})$

5) $\overline{X} \setminus \overline{Y} = \{a, d, e, h\} \setminus \{a, b, c, h\} =$

$= \{d, e, h\} = (C \cap \overline{A} \cap \overline{B}) \cup (A \cap C)$

1.2.25. Murakkab tōplamlni sodda-lashtirish.

$\overline{A} \cap \overline{B} \cap \overline{C} \cup \overline{A} \cap B \cap \overline{C} \cup A \cap B \cap C \cup A \cap \overline{B} \cap C$

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

$= U \cap (\overline{A} \cap \overline{C} \cup A \cap C) =$

$= A \Delta C.$

1.3.25. Tōplam tartibini topish.

$\overline{O} = 16$

$A = 24$ – Al. q + Al. ō. = Al. q + ōz. q.
qiz

$U = ?$

Qiz = 24 ta

$\overline{O}$ = 16 ta

$U = 24 + 16 = 40$

J: 40 ta

~~1.4 .~~

1.4.25. $A=\{1,2,3\}$

Refleksivlik $\forall x \in A$ uchun $(x;x) \in R$ (xRx)

Simmetriklik $\forall (x,y) \in R \Rightarrow (y,x) \Rightarrow R$

Tranzitivlik $(x,y) \in R \; (y,z) \in R \Rightarrow (x,z) \in R.$

Demak $A=\{1,2,3\}$ to'plamning dekart kvadratida aniqlangan $R=\{(1;1), (2,2), (3,3), (1,2), (2,1)\}$ munosabat ekvivalent munosabat bo'ladi.

1.5 .25.

$R_1=\{<a,1>, <a,3>, <b;2>, <b,4>, <c,1> <c;3>$

$<d;2>, <d;4>, <e;1>, <e;3>\}$

$R_2=\{<1,3>, <1,4>, <2;2>, <2,4>, <3;1> <3,2>,$

$<4,1>, <4;2>\}$

1) $D_e(R_1)=\{a, b, c, d, e\}$

$D_z(R_1)=\{1, 2, 3, 4\}$

2. $D_e(R_2)=\{1, 2, 3, 4\}$

$R_z(R_2)=\{1, 2, 3, 4\}$

2) Munosabat matrix.

$$[R_1]=\begin{bmatrix}1&0&1&0\\0&1&1&0\\1&0&1&0\\0&1&1&1\\1&0&0&0\end{bmatrix} \qquad [R_2]=\begin{bmatrix}0&0&1&1\\0&1&1&1\\0&1&1&0\\0&0&0&1\end{bmatrix}$$

$$[R_2^2]=\begin{bmatrix}0&0&1&1\\0&1&1&1\\0&1&1&0\\0&0&0&1\end{bmatrix}\cdot\begin{bmatrix}0&0&1&1\\0&1&1&1\\0&1&1&0\\0&0&0&1\end{bmatrix}=\begin{bmatrix}0&1&1&1\\0&1&1&1\\0&1&1&1\\0&1&1&1\\0&0&0&1\end{bmatrix}$$

$$R_1^T=\begin{bmatrix}1&0&1&0&1\\0&1&0&1&0\\1&1&1&1&0\\0&0&0&1&0\end{bmatrix} \qquad R_2^T=\begin{bmatrix}0&0&0&0\\0&1&1&0\\1&1&1&0\\1&1&0&1\end{bmatrix}$$

$$[R_1\cap R_1^T]=\begin{bmatrix}0&0&1&1\\0&1&1&1\\0&1&1&0\\0&0&0&1\end{bmatrix}\cap\begin{bmatrix}0&0&0&0\\0&1&1&0\\1&1&1&0\\1&1&0&1\end{bmatrix}=\begin{bmatrix}0&0&0&0\\0&1&1&0\\0&1&1&0\\0&0&0&1\end{bmatrix}$$

3) R_2 refleksiv emas chunki

$[R_2] \neq [E]$ $\quad [E] = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

R_2 simmetrik emas $[R_2] = [R_2^T]$

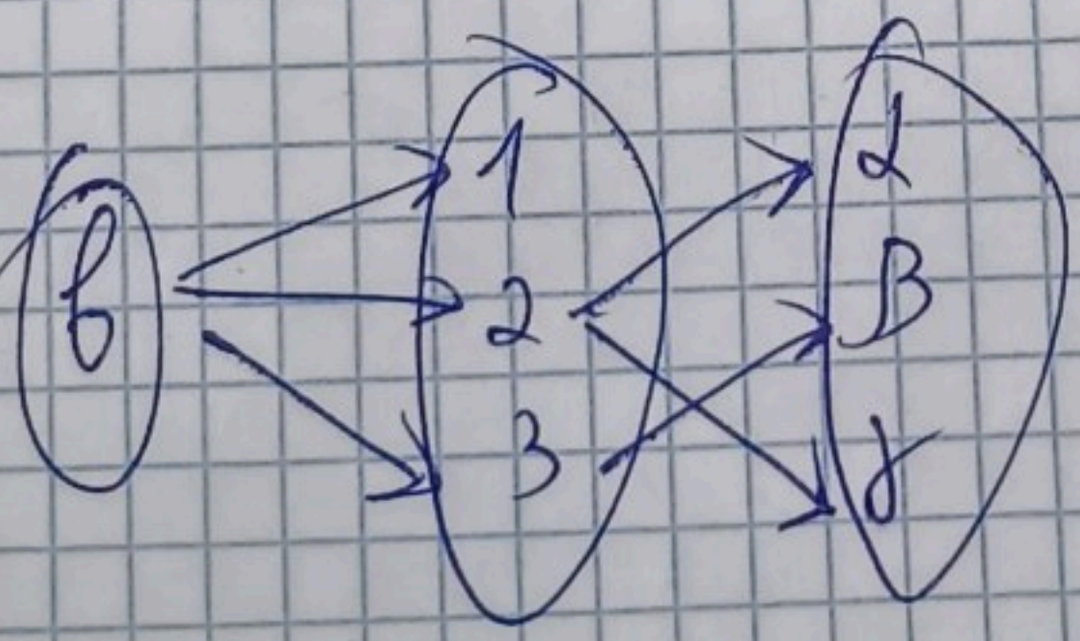
R_2 antisimmetrik emas $[R_2 \cap R_2^T] \not\subseteq [E]$

R_2 tranzitiv emas $[R_2^2] \not\subseteq [R_2]$

1.6. Munosabat kompozitsiyasi.

$R_1 \circ R_2 = \{(b;\beta), (b;\alpha), (b;\gamma)\}$

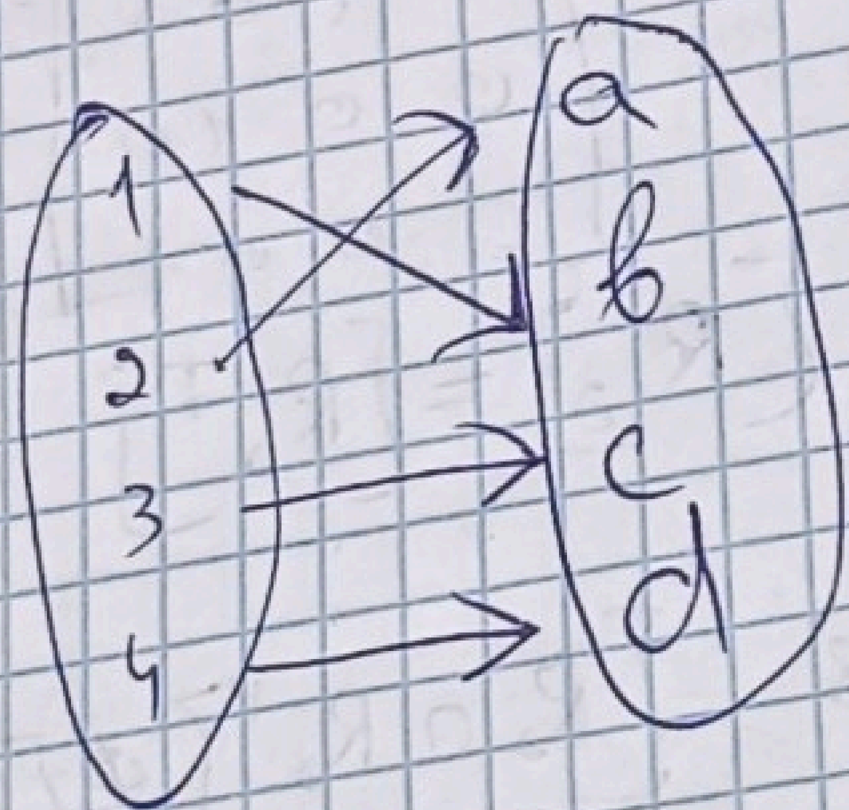
2-usul



funksiyaga bölmaydi.

1.7.25.

$R = \{(2;a),(1,b),(3,c),(4,d)\}$



funksiya.