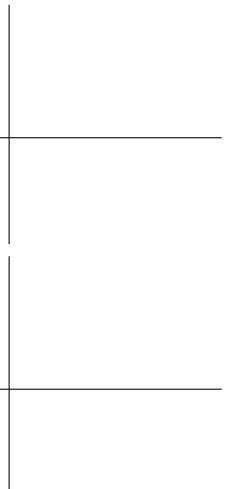
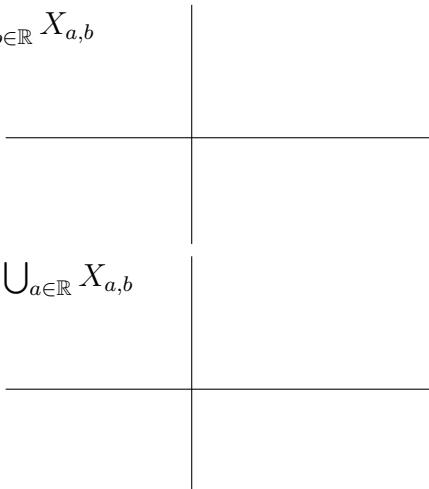


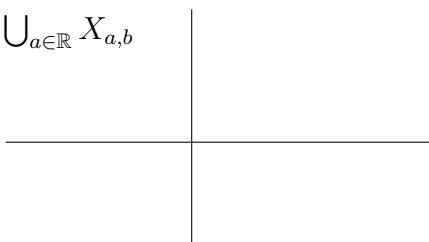
Name

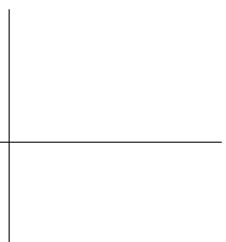
				row	col....
1.	2.	3.	4.	\sum	

1. For $X_{a,b} = \{(x,y) \in \mathbb{R}^2 : y > a(x-b)^2\}$ where $a, b \in \mathbb{R}$. Find:

$$\bigcap_{b \in \mathbb{R}} X_{a,b}$$


$$\bigcup_{b \in \mathbb{R}} X_{a,b}$$


$$\bigcup_{a \in \mathbb{R}} X_{a,b}$$


$$\bigcap_{b \in \mathbb{R}} \bigcup_{a \in \mathbb{R}} X_{a,b}$$


2. For $x, y \in \mathbb{R}$ let $x \sim y \Leftrightarrow \sin x = \sin y$. Prove that \sim is equivalence relation, find equivalence class $[0]_\sim$.

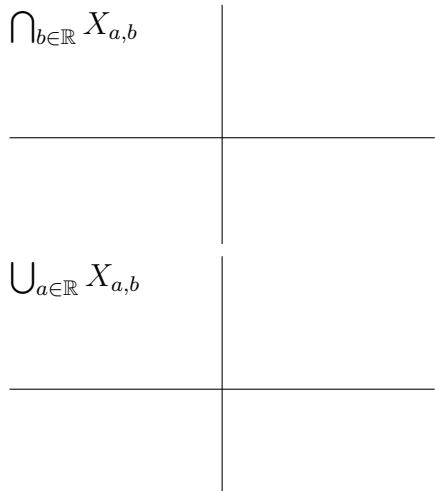
3. Let $f : \mathbb{R}^2 \rightarrow \mathbb{R}$, $f(x, y) = \frac{1}{xy}$. Find $f(\{(x, x) : x \in \mathbb{R}\})$ and $f^{-1}(\{1\})$.

4. For $(a, b), (c, d) \in \mathbb{N}^2$ let $(a, b) \preceq (c, d) \Leftrightarrow (a, b) = (c, d) \vee \max(a, b) < \max(c, d)$. Prove, that \preceq is partial order. Do not draw Hasse diagram.

Name

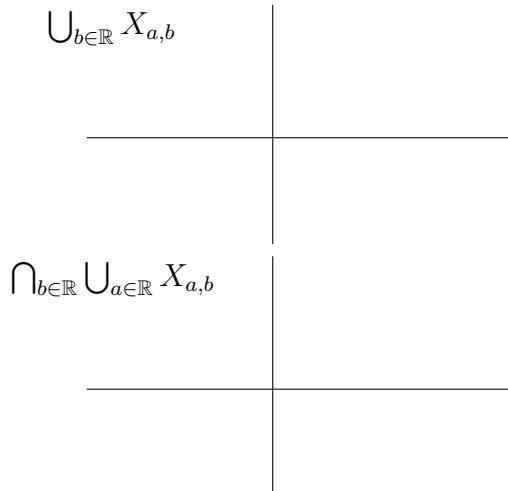
				row	col....
1.	2.	3.	4.	\sum	

1. For $X_{a,b} = \{(x,y) \in \mathbb{R}^2 : y < a(x-b)^2\}$ where $a, b \in \mathbb{R}$. Find:



$$\bigcup_{a \in \mathbb{R}} X_{a,b}$$

2. For $x, y \in \mathbb{R}$ let $x \sim y \Leftrightarrow \cos x = \cos y$. Prove that \sim is equivalence relation, find equivalence class $[0]_\sim$.



$$\bigcap_{b \in \mathbb{R}} \bigcup_{a \in \mathbb{R}} X_{a,b}$$

3. Let $f : \mathbb{R}^2 \rightarrow \mathbb{R}$, $f(x, y) = \frac{1}{xy}$. Find $f(\{(x, x) : x \in \mathbb{R}\})$ and $f^{-1}(\{-1\})$.

4. For $(a, b), (c, d) \in \mathbb{N}^2$ let $(a, b) \preceq (c, d) \Leftrightarrow (a, b) = (c, d) \vee a + b < c + d$. Prove, that \preceq is partial order.
Do not draw Hasse diagram.