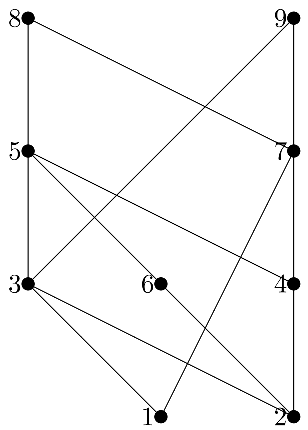
Name ........................................................................ group HA... row .... col....

| 1. | 2. | 3. | $\sum$ |
|---|---|---|---|
| | | | |

1.(2p) Write the mathematical formulas corresponding to the following statement with the help of the following signs only: propositional connectives, quantifiers, and symbols $\in, \mathbb{R}, \mathbb{R}^{\mathbb{R}}, \leq, <, =, \cdot, +, -, 0$.
*every odd function has a maximum if and only if it has a minimum*

2.(2p) Find sup for every par of elements




| sup | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | | | | | | | | |
| 2 | x | 2 | | | | | | | |
| 3 | x | x | 3 | | | | | | |
| 4 | x | x | x | 4 | | | | | |
| 5 | x | x | x | x | 5 | | | | |
| 6 | x | x | x | x | x | 6 | | | |
| 7 | x | x | x | x | x | x | 7 | | |
| 8 | x | x | x | x | x | x | x | 8 | |
| 9 | x | x | x | x | x | x | x | x | 9 |

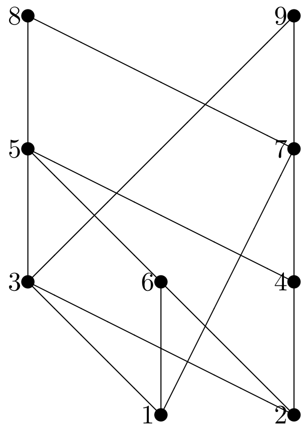
3.(4p) For $(x, y), (z, t) \in \mathbb{R}^2$ $(x, y) \sim (z, t) \Leftrightarrow \exists k \in \mathbb{Z}\ \sin x - y + k = \sin z - t$. Prove $\sim$ is equivalence relation in $\mathbb{R}^2$. Find and draw equivalence class $[(0, 1)]_\sim$.

Name ..........................................................................  group HA... row .... col....

| 1. | 2. | 3. | $\sum$ |
|---|---|---|---|
| | | | |

1.(2p) Write the mathematical formulas corresponding to the following statement with the help of the following signs only: propositional connectives, quantifiers, and symbols $\in, \mathbb{R}, \mathbb{R}^{\mathbb{R}}, \leq, <, =, \cdot, +, -, 0$.
*every even function has a maximum or a minimum*

2.(2p) Find inf for every par of elements




| inf | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | x | x | x | x | x | x | x | x |
| 2 | | 2 | x | x | x | x | x | x | x |
| 3 | | | 3 | x | x | x | x | x | x |
| 4 | | | | 4 | x | x | x | x | x |
| 5 | | | | | 5 | x | x | x | x |
| 6 | | | | | | 6 | x | x | x |
| 7 | | | | | | | 7 | x | x |
| 8 | | | | | | | | 8 | x |
| 9 | | | | | | | | | 9 |

3.(4p) For $(x,y),(z,t) \in \mathbb{R}^2$ $(x,y) \sim (z,t) \Leftrightarrow \exists k \in \mathbb{Z}\ |x| - y + k = |z| - t$. Prove $\sim$ is equivalence relation in $\mathbb{R}^2$. Find and draw equivalence class $[(0,1)]_\sim$.