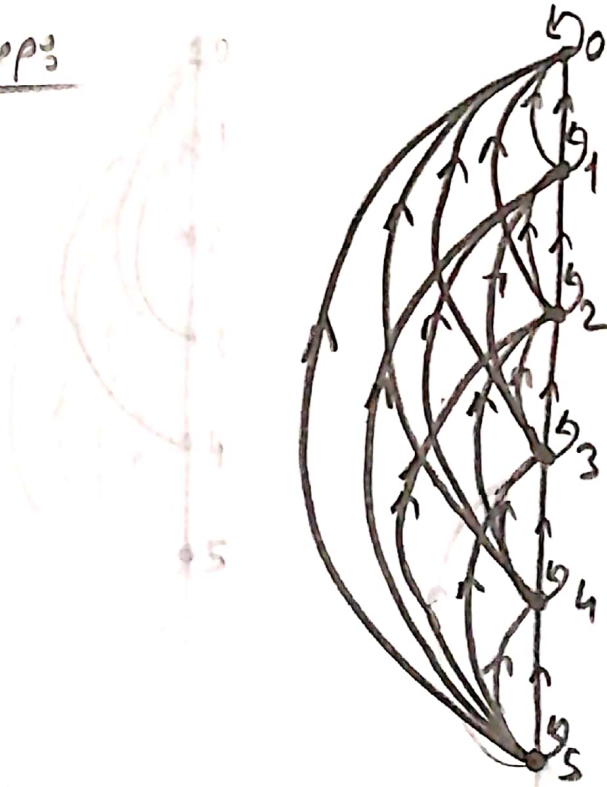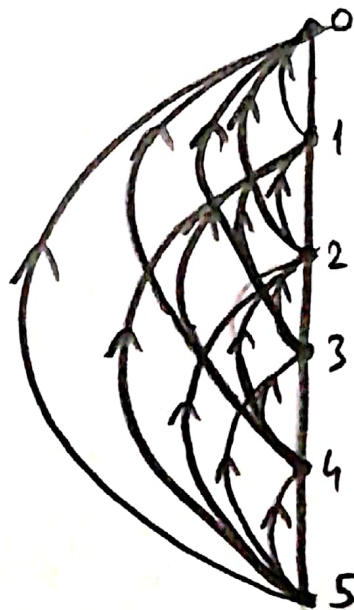1) $(\{0,1,2,3,4,5\}, \geq)$

$e = \{(0,0), (1,1), (2,2), (3,3), (4,4), (5,5), (1,0), (2,0), (3,0),$
$(4,0), (5,0), (2,1), (3,1), (4,1), (5,1), (3,2), (4,2), (5,2), (4,3),$
$(5,3), (5,4)\}$

First steps

Second steps

Remove self loop (reflexive)

Third steps

Remove transitive relation

Four Steps

We now remove the arrows by placing all of the initial elements below the terminal elements.

This is the hasse diagram.

2)

Given: $(\{\{1\}, \{2\}, \{4\}, \{1,2\}, \{1,4\}, \{2,4\}, \{3,4\},$
$\{1,3,4\}, \{2,3,4\}\}, \subseteq)$.

a) The maximal elements are not have any elements above it.

maximal elements = $\{1,2\}$, $\{2,3,4\}$, $\{1,3,4\}$

b) The minimal elements are not have any elements below it.

minimal elements = $\{1\}$, $\{2\}$, $\{4\}$

c) The greatest element only exist is there one maximal element and is equal to that maximal element.

greatest element = Does not exist.

d) The upper bounds of $\{\{2\}\}, \{\{4\}\}$;

upper bounds = $\{2,4\}$, $\{2,3,4\}$

e) The least upper bound of $\{\{2\}\}, \{\{4\}\}$;

least upper bound = $\{2,4\}$

Because $\{2,3,4\}$ is above $\{2,4\}$

f) all lower bounds of $\{\{1,3,4\}\}, \{\{2,3,4\}\}$;

lower bounds = $\{4\}$, $\{3,4\}$.

h) greatest lower bound = $\{3,4\}$

because $\{3,4\}$ is above $\{4\}$.