LECTURE 3

Suppose that (i) f_σ is injective $\forall \sigma \notin \Delta$

(ii) $\text{im} f_\sigma \cap \text{im} f_\tau = \text{im} f_{\sigma \cap \tau}$

where im denotes image ; then f for $\sigma, \tau \in$

$|\Delta| : \bigcup_{\sigma \in \Delta} \text{im}(f_\sigma)$

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along with

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$\tau := \{A \cap |k| : A$ " an open set in $\mathbb{R}^d$ under standard topology $\}$ is the geometric realization of Δ

Example, (1) $\Delta = \{1, 2, 12\}$, Then $V = \{1, 2\}$

Let $f : V \longmapsto \mathbb{R}$ given by $f(1) = 5$ &

$f(2) = 10$

$f_1 : X^0 \longrightarrow \mathbb{R} := |x| f(1) = 5$

Similarly $f_2 : X^0 \longmapsto \mathbb{R} = |x| f(2) = 10$

Finally : $f_{12} : X^1 \longmapsto \mathbb{R}$ &

$f_{12} = \lambda_0 f(1) + \lambda_1 f(2) = x5 + 10$

Verify f_1, f_2, f_{12}. f_1 & f_2 are trivially injective

take $x, x' \in$ $f(x) = f(x')$

$\lambda_0 f(1) + \lambda_1 f(2) = \lambda'_0 f(1) +$

Now, $f(1)$ & $f(2)$ are same,

$(\lambda_0 - \lambda'_0) f(1) = \lambda_1 -$

$Im(f_1) \cap Im(f_2) = \phi$

$Im(f_1 \cap f_2) = Im(f_\phi) = \phi$

$A \cap \{1,2\} = \phi$.

Now $Im(f_1) \cap Im(f_{\{1,6\}}) = \{5\}$

Also, $Im(f_{1 \cap \{1,2,3\}}) = Im(f_2) = \{5\}$

Similarly $Im(f_2) \cap Im(f_{\{1,2\}}) = Im(f_{2 \cap \{1,2,3\}})$

Some Notions Of Abstract Algebra