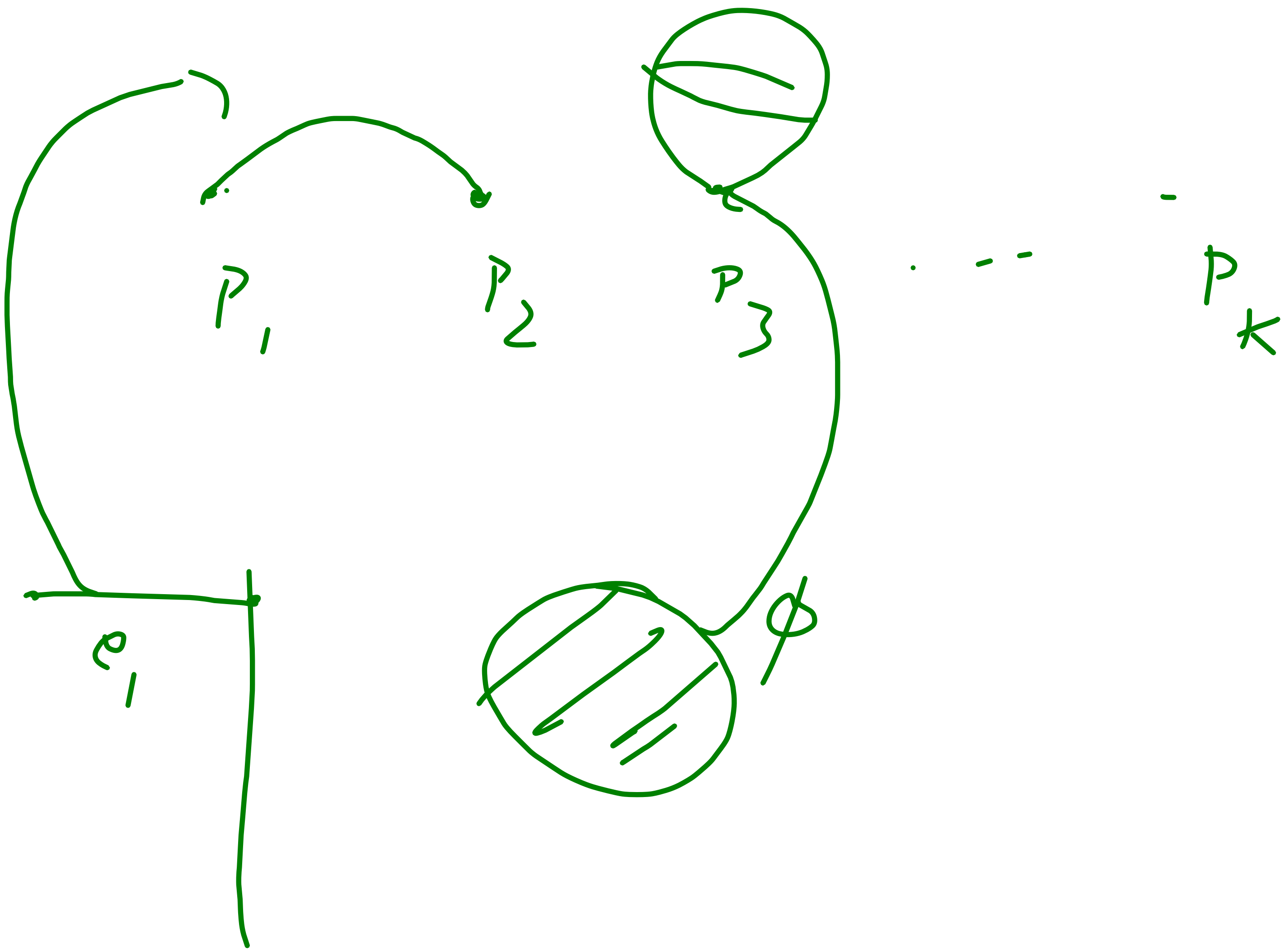
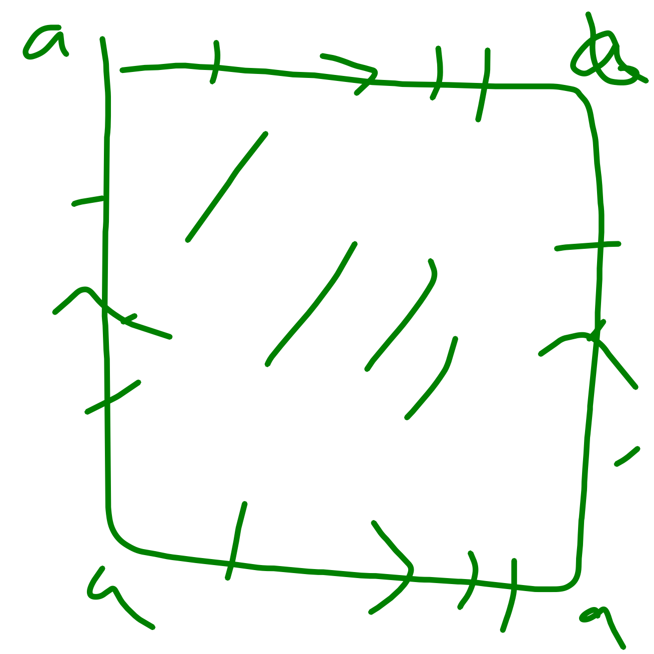
* $X_0 = \{p_1, \ldots, p_k\}$

$X_0 \sqcup_\phi e_1$,





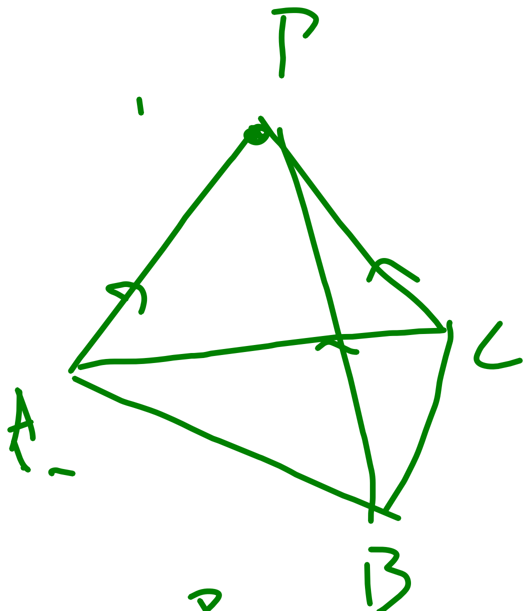
$$1 - \binom{n}{1} + \binom{n}{2} - \cdots (-1)^n \binom{n}{n} = 0$$

$$\parallel$$

$$(1-1)^n = 0$$

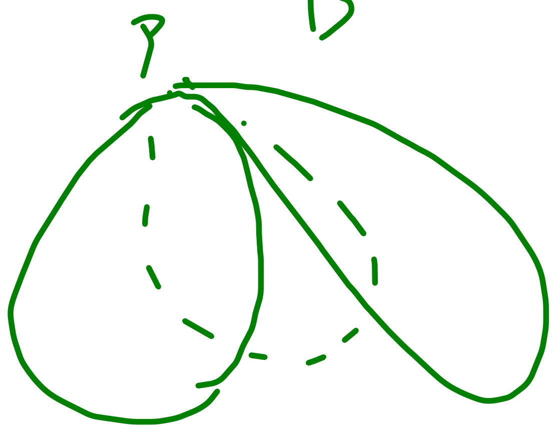
$$\chi(\Sigma) = b_0 - b_1 + \cdots$$

$$= 1 - 0 + \cdots = 1$$



$\binom{3}{2}$

1 - dimensional Faces in the complement of P



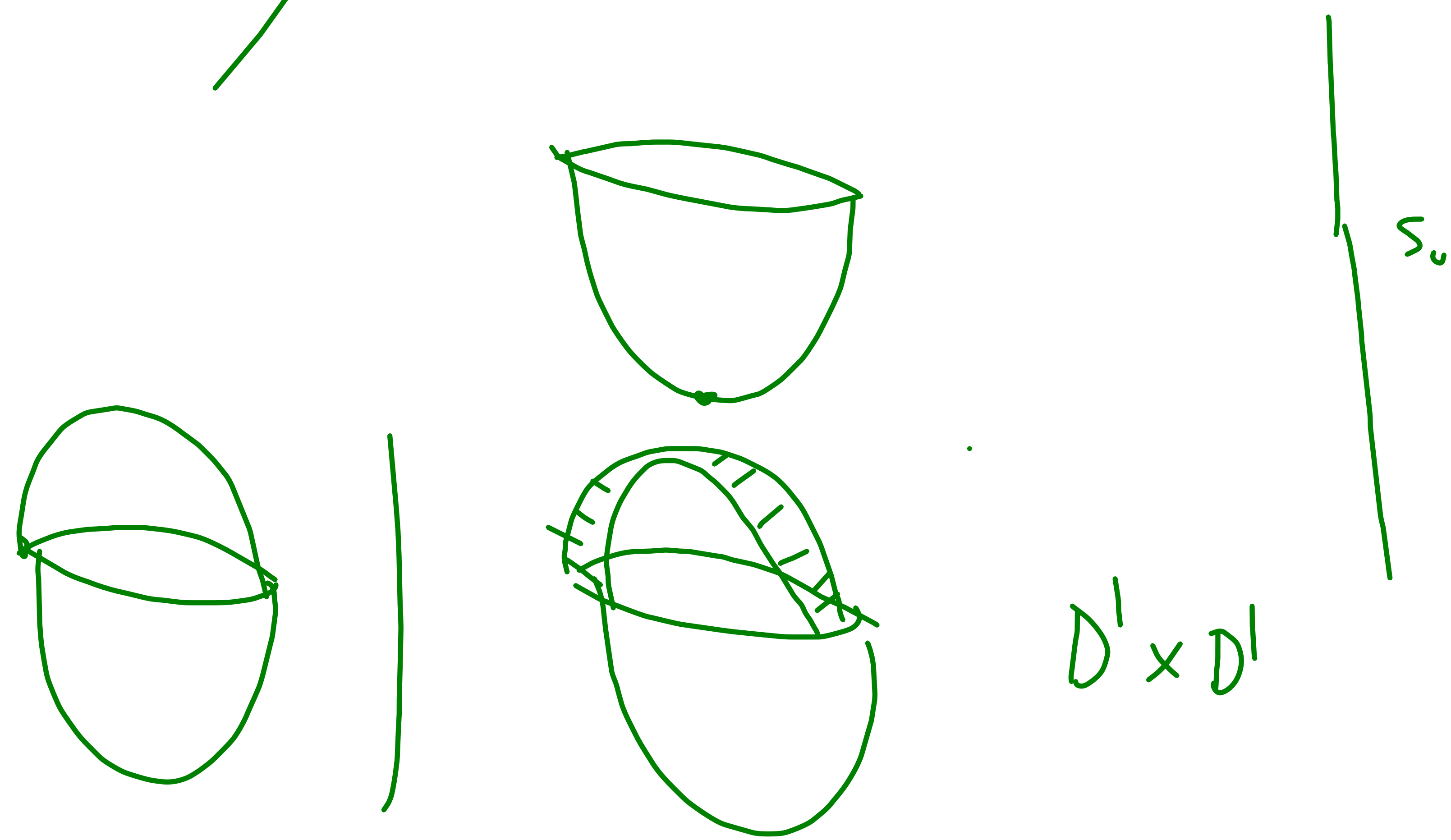
$S^1 \vee S^1 \vee S^1$

$b_1 = 3$

$f : M \to \mathbb{R}$

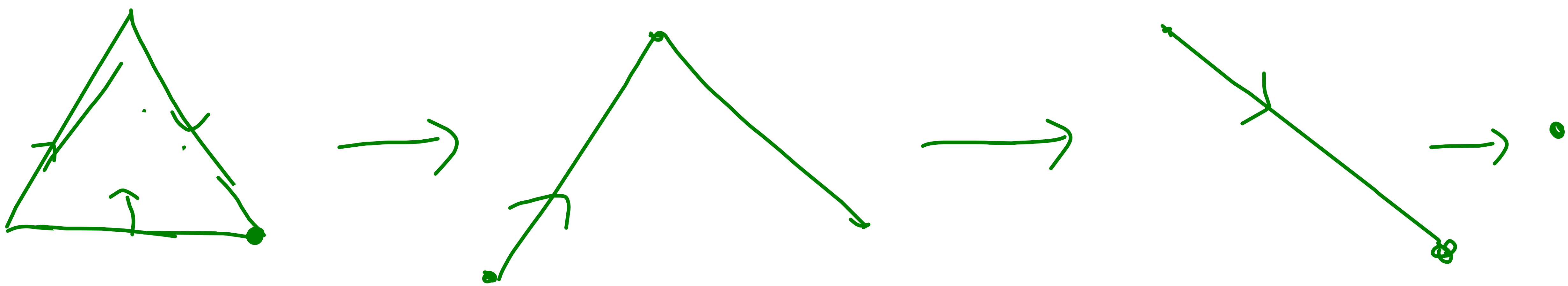
$s \in \mathbb{R}$

$f^{-1}([-\infty, s]) = M_s$



$D^1 \times D^1$

T^2 = 0 cell $\cup$ 1 cell $\cup$ 1 cell $\cup$ 2 cell



$$K \simeq e_0 \cup (e_d) \cup e_d \cup \cdots \cup e_d$$

$$(-1)^{|E|+|V|} \sum_{\cdots} \underbrace{+ve}_{\cdots} \; \underbrace{+ve}_{} \; (-1)^{|E|-|V|}$$

$k = |E| - |V|$

$$H_k(\Delta^c_v) \cong H^{|E|-k-3}(A_v)$$

$\neq 0$

only if $k = |E| - |V|$ $\cong H^{|V|-3}(A_v) \cong H_{|V|-3}(A_v)$