§44 Cohomology Theory!

- Given any chain complex $\mathcal{C} = \{C_p, \partial\}$ we can define $\{C^p, \delta\}$ and hence cohom. gps of $\mathcal{C}$.

- $\exists$ a list of axioms for cohom!

- We can define singular cohom gps. Just let $S^p(X) = \mathrm{Hom}(S_p(X), \mathbb{Z})$.

- For space underlying a simplical complex (K, K_0) we have $H^p(|K|, |K_0|) \cong H^p(K, K_0)$. That is sing and simp cohomology are identical when both are defined.

§45 More Thy!

If $\mathcal{C}$ and $\mathcal{C}'$ are free chain complexes (each gp is free abelian), then if $H_p(\mathcal{C}) \cong H_p(\mathcal{C}')$ $\forall p$ we also have $H^p(\mathcal{C}) \cong H^p(\mathcal{C}')$, $\forall p$.

So cohom doesn't tell us anything hom doesn't.

§46 Even More Thy!!