Exercise: $\mathrm{Ext}^*(C, D) = 0 \quad \forall$ p-complete D

$\Rightarrow$ $p : C \to C$ isom

Exact: $0 \to \ker p \to C \xrightarrow{p} C \to \mathrm{coker}\, p \to 0$

$p \ker p = 0 = \mathrm{coker}\, p \Rightarrow \ker p,\ \mathrm{coker}\, p$ p-complete.

$\therefore$ Hyp $\Rightarrow$ $\mathrm{coker}\, p = 0$

$\therefore$ long ex seq $\Rightarrow$ $\mathrm{Ext}^1(\ker p, D) = 0 \quad \forall$ p-complete D.

$\Rightarrow \ker p = 0.$

3) $X \xrightarrow{i} \hat{X}_p$ is p-completion:

1) $\pi_* \hat{X}_p$ is p-complete

2) i is mod p homology isom

universal property. $X \xrightarrow{i} \hat{X}_p$

$\downarrow$ $\exists!$ unique up to homotopy

Y p-complete