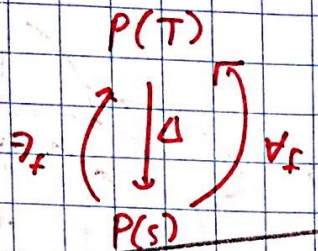
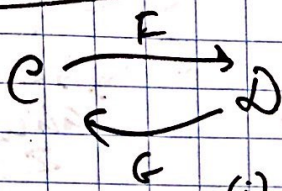


$S, T \in \text{Sets}$, $P(S), P(T)$, $f: S \rightarrow T$



lim



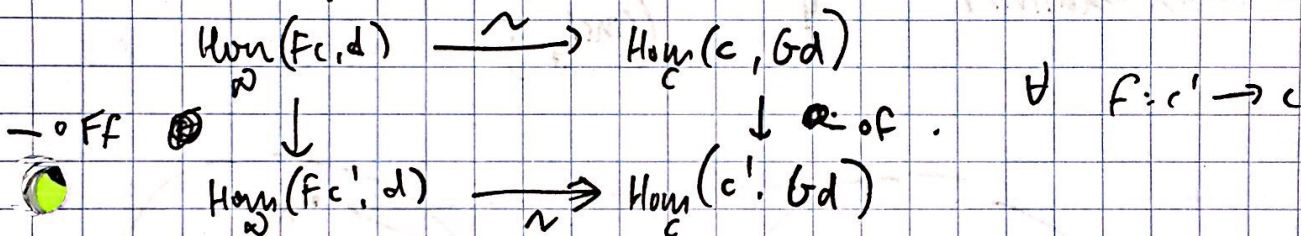
F is left adj. to G if...

$$\text{Hom}_{\mathcal{D}}(Fc, d) \cong \text{Hom}_{\mathcal{C}}(c, Gd)$$

bijection

$\forall c \in \mathcal{C}, d \in \mathcal{D}$

(ii) naturality.



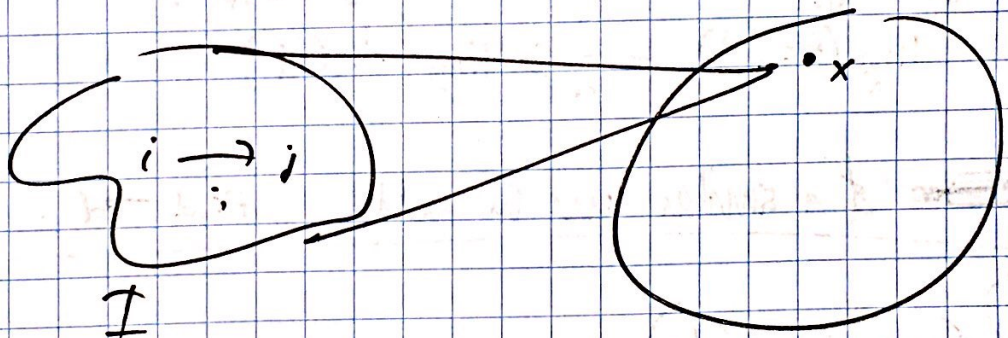
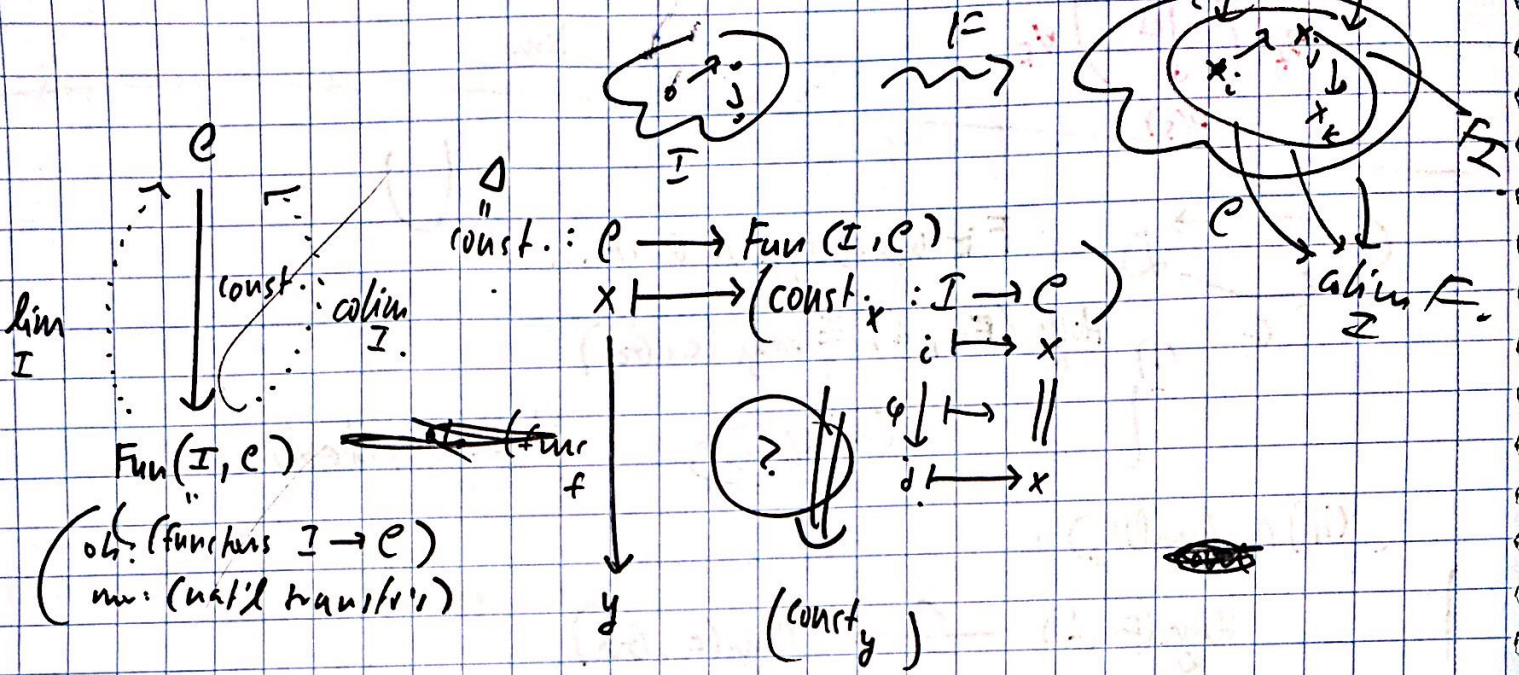
~~and~~ a similar one for all $f: d \rightarrow d'$.

ex/1. (free, forgetful.)

ex/1. 4.1.7. (floor-ceiling)

ex/1. power set.

Say \mathcal{C} is a ~~category~~ \mathcal{C} and $F: I \rightarrow \mathcal{C}$ is a diagram.



Claim: If $F: I \rightarrow \mathcal{C}$ admits a limit, then this gives a functor $\lim_I : \text{Fun}(I, \mathcal{C}) \rightarrow \mathcal{C}$

$F \mapsto \lim_I F$

\lim_I is left adjoint to const.

(ex/1) ~~Interpret~~ Hom -sets) adjt.

