


对象的类 $Ob(C)$

态射的类 $Mor(C)$

特定对象态射的类 $Hom_C(A, B)$

对偶范畴 (Dual) C^o

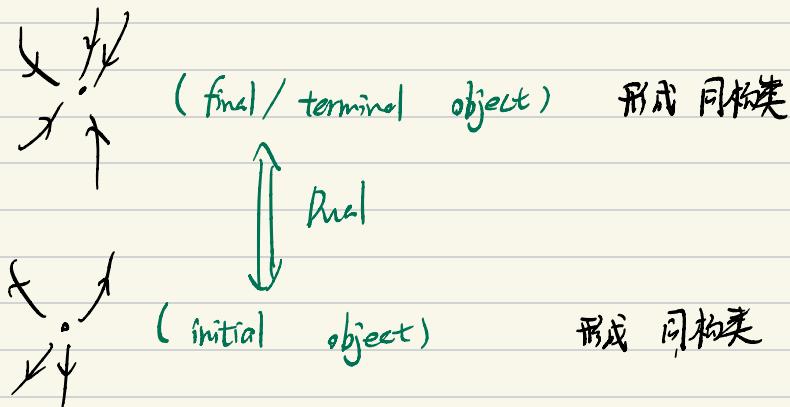
单态 (monomorphism): 左可消

满态 (epimorphism): 右可消

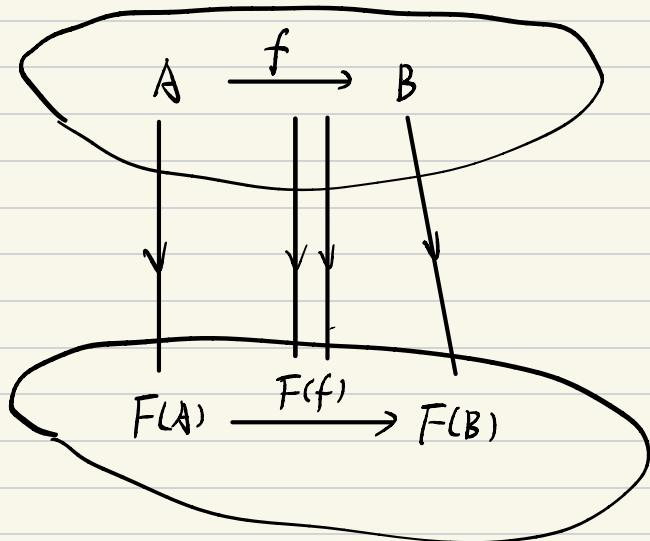
同构 (isomorphism): 可逆

单态 + 满态 $\not\Rightarrow$ 同构 ($f: \mathbb{Z} \rightarrow \mathbb{Q}$, 不存在非平凡环同态)

对象:

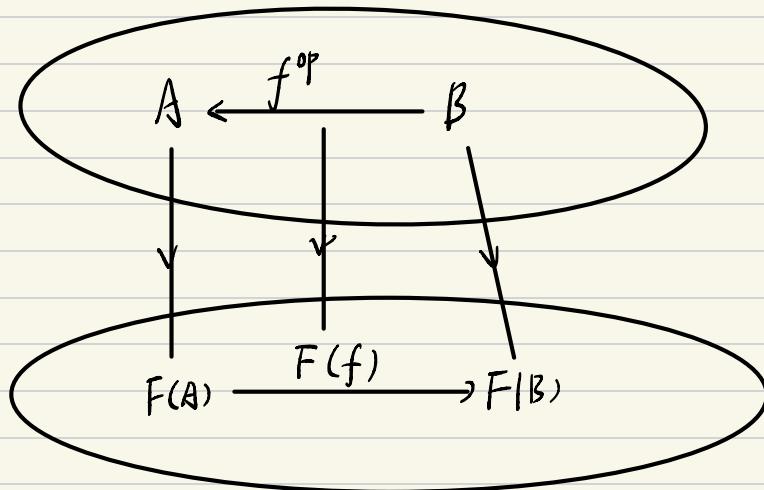


共变函子: covariant Functor



$\text{Ab} \hookrightarrow \text{Grp} \hookrightarrow \text{Set}$ $\text{Top} \hookrightarrow \text{Set}$ (Forgetful Functor)
遗忘函子

逆变函子 contravariant Functor.



忠实函子 (Faithful Functor) :

$$F|_{\text{Hom}_c(A, B)} : \text{Hom}_c(A, B) \rightarrow \text{Hom}_{F(C)}(F(C), F(D)) \quad \text{monomorphism.}$$

满函子 (Full Functor)

$$F|_{\text{Hom}_c(A, B)} : \text{Hom}_c(A, B) \rightarrow \text{Hom}_{F(C)}(F(C), F(D)) \quad \text{epimorphism.}$$

忠实 + 满 \Leftrightarrow 满忠实函子 / 嵌入 (几乎保留原范畴性质)

本质满射 / 稠密函子 (essentially surjective / dense functor)

$$\forall Y \in \text{Ob}(F(C)), \exists X \in \text{Ob}(C), (Fx) \hookrightarrow Y$$

[即同构意义下，函子为满射]