


I. RIGID CATEGORIES


DROPPING DIRECTIONAL ARROWS FOR BREVITY

RIGID CATEGORY

$(\mathcal{C}, \otimes, \mathbb{1}, a, l, r, (-)^*, {}^*(-))$
 MONOIDAL

$\exists X^* \in \mathcal{C}$ WITH


$ev_X^L: X^* \otimes X \rightarrow \mathbb{1}$ 


$coev_X^L: \mathbb{1} \rightarrow X \otimes X^*$ 

$x \curvearrowright = 1^x \neq x^* \curvearrowleft = 1^{x^*}$

-AND-

$\exists {}^*X \in \mathcal{C}$ WITH

$ev_X^R: X \otimes {}^*X \rightarrow \mathbb{1}$ 

$coev_X^R: \mathbb{1} \rightarrow {}^*X \otimes X$ 

$x \curvearrowleft = 1^x \neq {}^*x \curvearrowright = 1^{x^*}$

$\forall X \in \mathcal{C}$

COOL FACTS

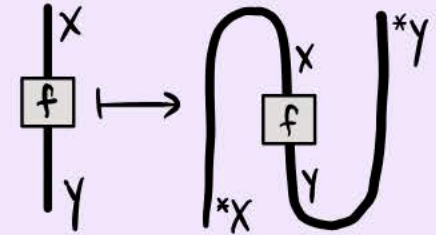
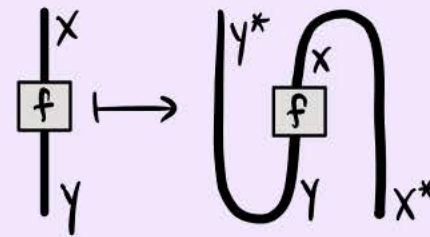
GET CONTRAVARIANT, STRONG MONOIDAL FUNCTORS

$(-)^*: \mathcal{C}^{rev} \rightarrow \mathcal{C}$

${}^*(-): \mathcal{C}^{rev} \rightarrow \mathcal{C}$

$X \mapsto X^*$

$X \mapsto {}^*X$



GET COVARIANT, STRONG MONOIDAL FUNCTORS

$(-)^{**}: \mathcal{C} \rightarrow \mathcal{C}$

${}^{**}(-): \mathcal{C} \rightarrow \mathcal{C}$

$X \mapsto X^{**}$

$X \mapsto {}^{**}X$

