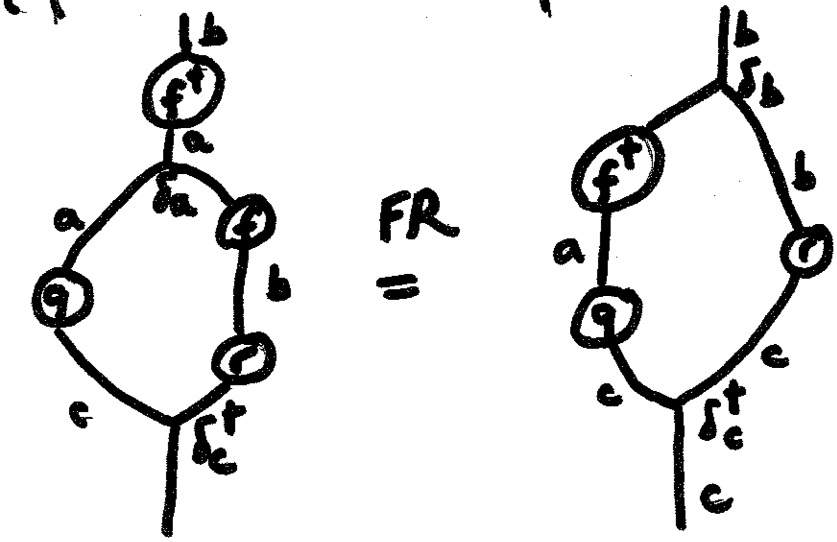
FR : given map $f : a \to b$, $f \dashv f^\dagger : b \nrightarrow a$

$q : a \nrightarrow c$, $r : b \nrightarrow c$

canonical $(q \wedge rf)f^\dagger \longrightarrow qf^\dagger \wedge r$ is an iso.

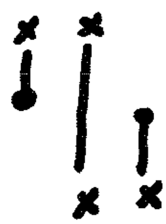


Put : $f = \delta_x$: 

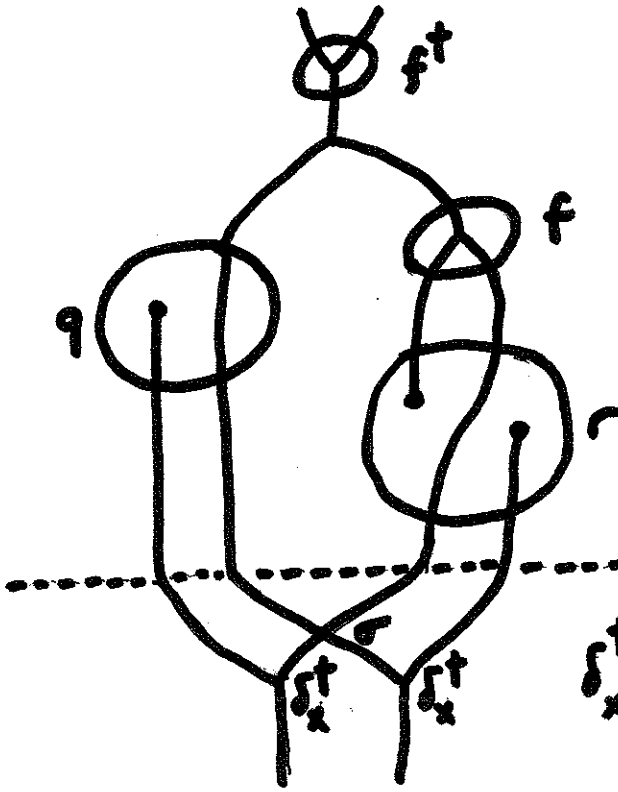
$f^\dagger =$ 

$q = \varepsilon_x^\dagger \otimes 1_x$: 

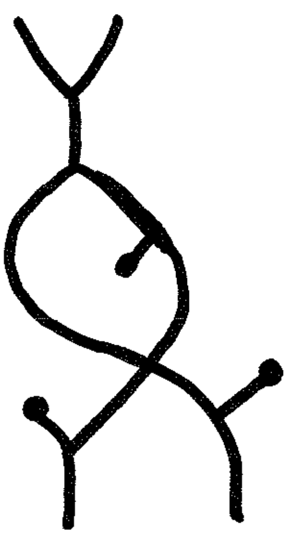
[$\varepsilon_x : x \to 1$ map to terminal]

$r = \varepsilon_x \otimes 1_x \otimes \varepsilon_x^\dagger$: 

LHS of FR :

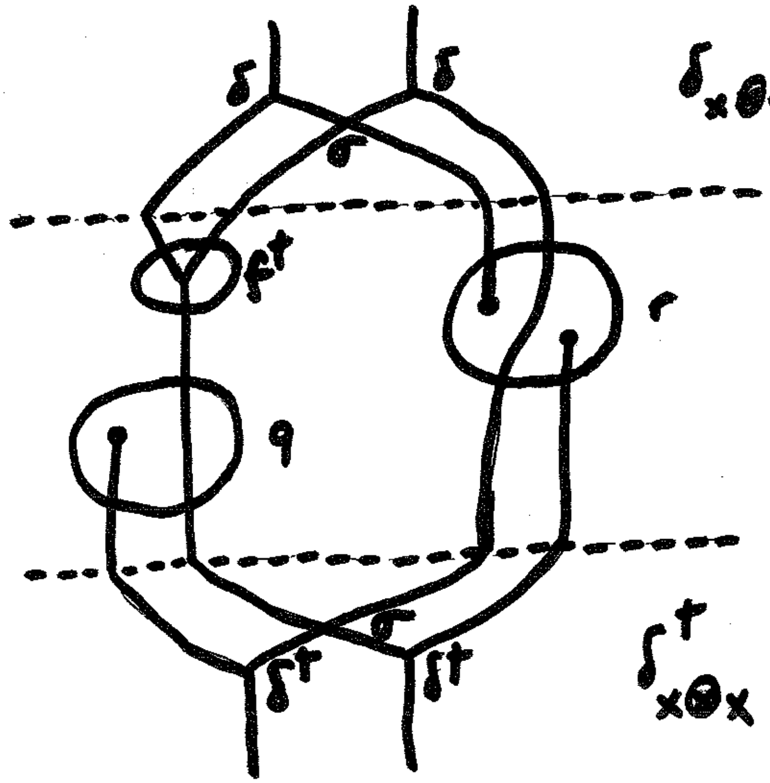


$$\delta^\dagger_{x\otimes x} = (\delta_x^\dagger \otimes \delta_x^\dagger) \circ (1_x \otimes \sigma \otimes 1_x)$$

=  = 

$$: \sigma \circ \delta_x \circ \delta_x^\dagger$$

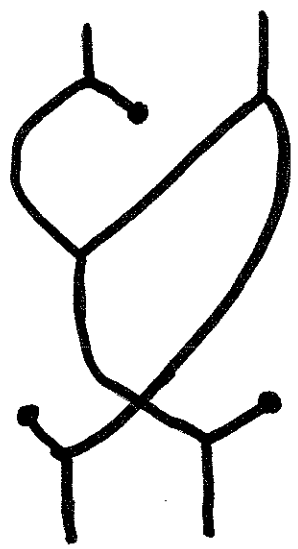
RHS of FR :



$$\delta_{X\otimes X} = (1_X\otimes\sigma\otimes 1_X)\circ(\delta_X\otimes\delta_X)$$

$$\delta^\dagger_{X\otimes X} = (\delta^\dagger_X\otimes\delta^\dagger_X)\circ(1_X\otimes\sigma\otimes 1_X)$$

=



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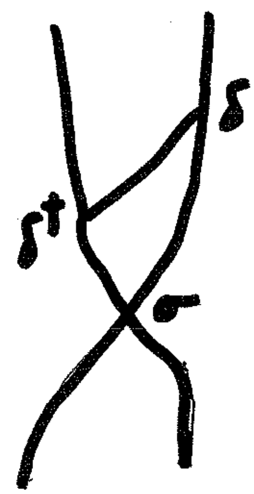

: $\sigma\circ(\delta^\dagger\otimes 1_X)\circ(1_X\otimes\delta)$

FR : $\sigma\delta\delta^\dagger = \sigma(\delta^\dagger\otimes 1)(1\otimes\delta)$

$\Rightarrow \delta\delta^\dagger = (\delta^\dagger\otimes 1)(1\otimes\delta)$: Frobenius law $\square$