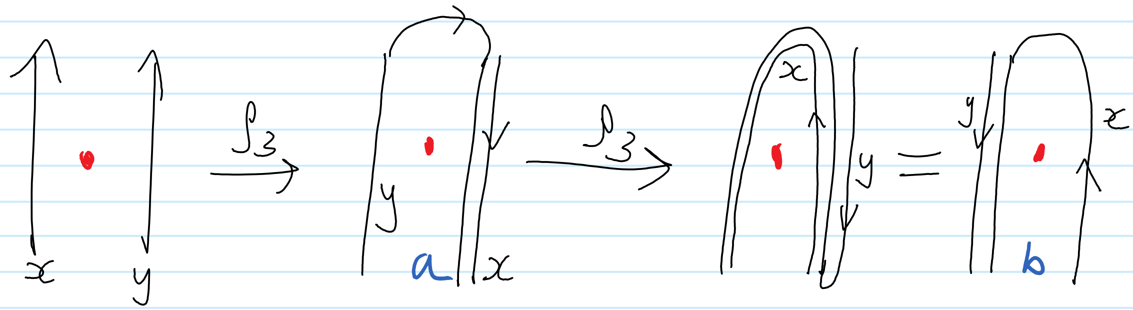
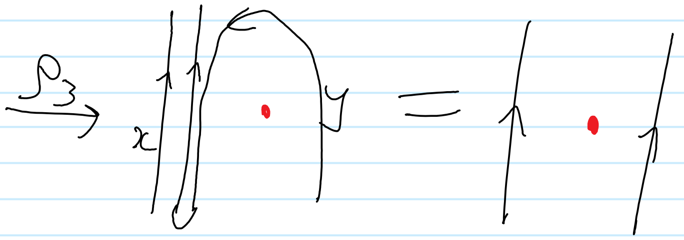
Two ρ_3's on $A^w(2)$

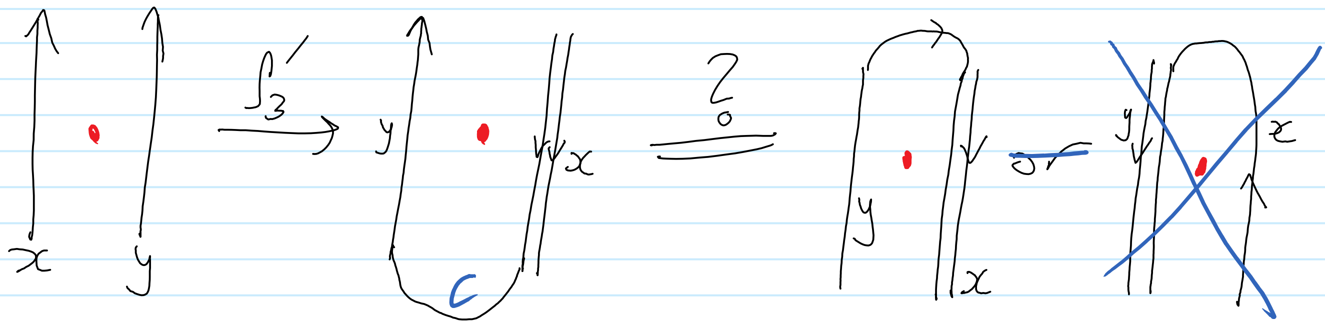
August-06-15 5:13 AM

(150806) Two ρ_3's on $\mathcal{A}^w(\uparrow_x\uparrow_y)$: $S^y/\!/\Delta^y_{yz}/\!/\{m^{xz}_x, m^{zx}_x\}/\!/\sigma^{xy}_{yx}$.

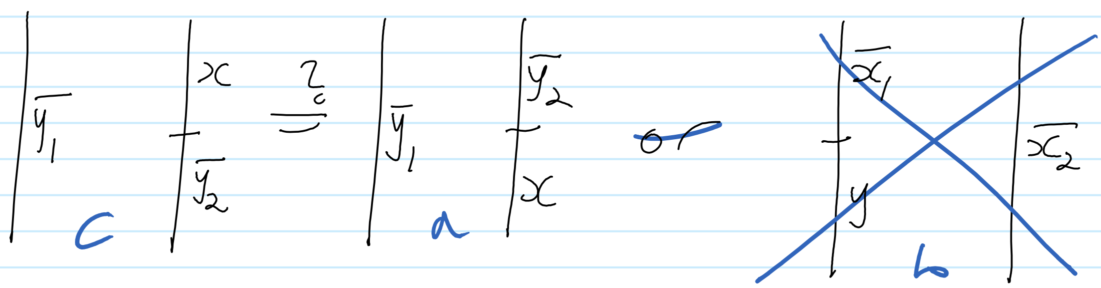




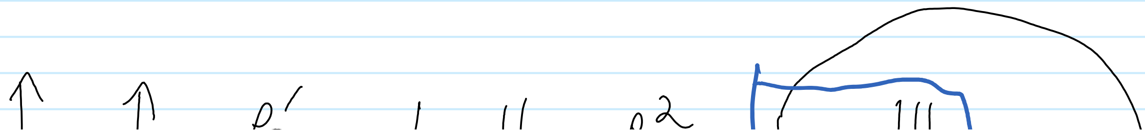
So $\rho_3^3 = Id$.

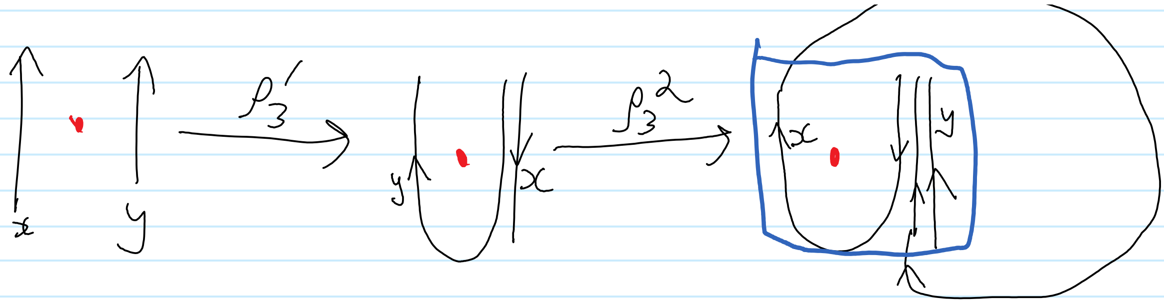


In other words,

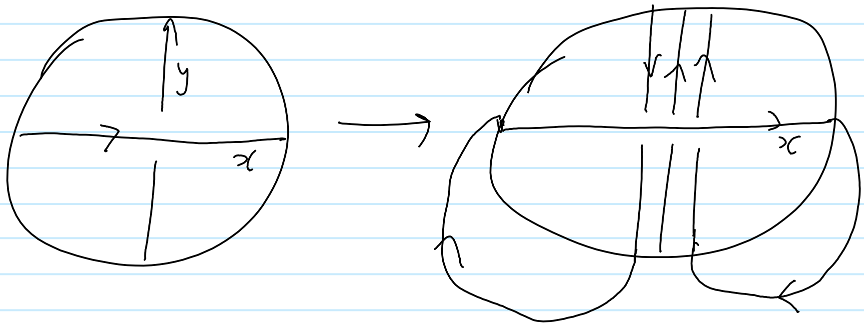


what is $\rho_3'/\!/\rho_3^{-1} = \rho_3'/\!/\rho_3^2$?





$$(x,y) \longmapsto (x^y, y)$$



?

Automorphisms of F_2: $(FG(x,y))$

$$\begin{matrix} x \\ y \end{matrix} \xrightarrow{\rho_3} \begin{matrix} y^{-1} \\ xy^{-1} \end{matrix} \xrightarrow{\rho_3} \begin{matrix} yx^{-1} \\ y^{-1}yx^{-1} = x^{-1} \end{matrix} \xrightarrow{\rho_3} \begin{matrix} xy^{-1}y = x \\ (y^{-1})^{-1} = y \end{matrix}$$

$$\begin{matrix} x \\ y \end{matrix} \xrightarrow{\rho_3'} \begin{matrix} y^{-1} \\ y^{-1}x \end{matrix} \xrightarrow{\rho_3'} \begin{matrix} x^{-1}y \\ x^{-1}yy^{-1} = x^{-1} \end{matrix} \xrightarrow{\rho_3'} \begin{matrix} yy^{-1}x = x \\ (y^{-1})^{-1} = y \end{matrix}$$

$\rightsquigarrow$ ρ_3 & ρ_3' differ, but just by an inner automorphism.

$\rightsquigarrow$ $\mathrm{Aut}(F_2)$ acts on $\mathcal{A}^w(2)$; restricted to ~~$\mathcal{A}^u(2)$~~ $\mathcal{A}^u(2)$, the action descends to $\mathrm{Out}(F_2)$