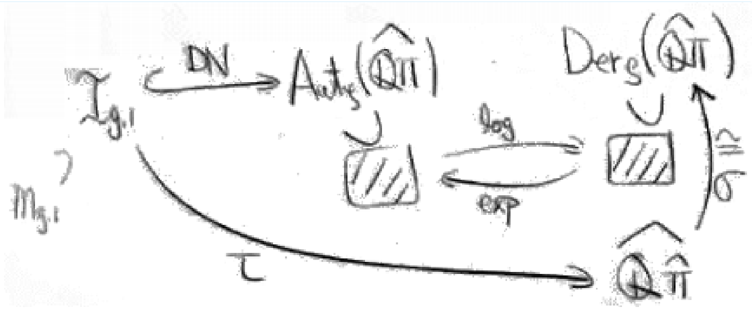
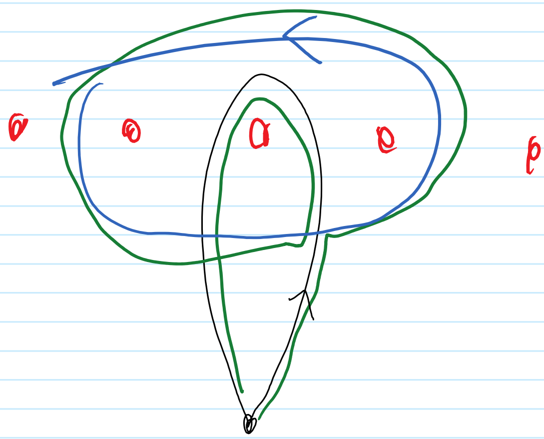
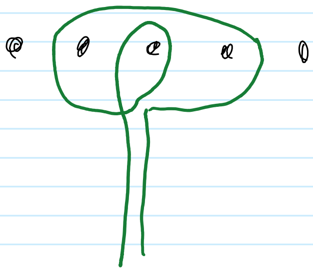
Deciphering Kawazumi / Kuno, 2

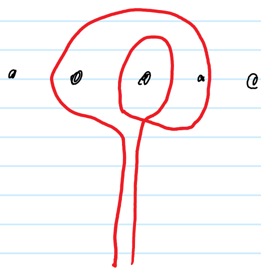
Sunday, October 25, 2015 11:37 AM

(151006) Kuno@LD15: (missing: the archetypical model for "σ is an isomorphism")







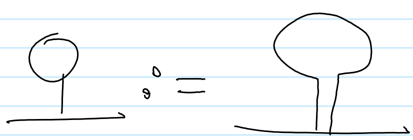


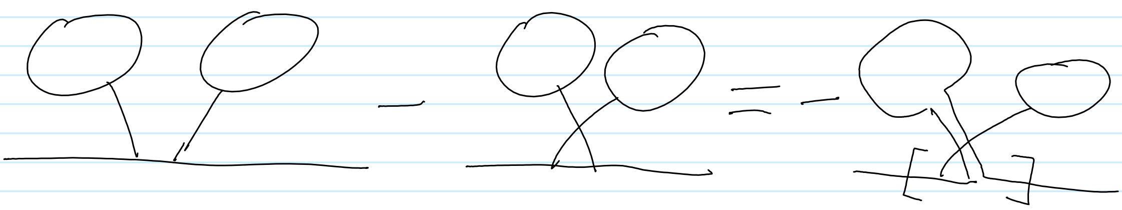
Q. What's a group commutator, in bracket language?

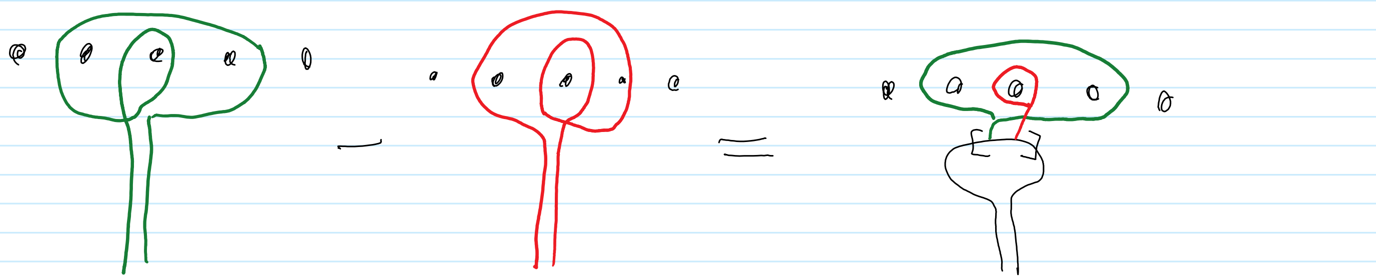
$aba^{-1}b^{-1}-1$

Proposition 2.12. *If $x, y \in G$, then $\widetilde{(x,y)} \in I^2$ and in $\mathcal{A}(G)_2 = I^2/I^3$, $\widetilde{(x,y)} = [\bar{x}, \bar{y}]$.*

Proof. In $\mathbb{Q}G$ and since e is central, $[\tilde{x}, \tilde{y}] = [x, y] = \widetilde{(x,y)}yx$. Hence $\widetilde{(x,y)}yx \in I^2$, hence $\widetilde{(x,y)}(yx - e) \in I^3$, hence modulo I^3, $\widetilde{(x,y)} = \widetilde{(x,y)}yx = [\tilde{x}, \tilde{y}] = [\bar{x}, \bar{y}]$. $\square$







Is the following true?

1. $\exists\ \partial : \mathbb{Q}FG_n \to \operatorname{der}(\mathbb{Q}FG_n)$ which descends to conjugacy classes, and with $\partial_w \prod x_i = 0$

2. Any derivation D of $\mathbb{Q}FG_n$ with $D \prod x_i = 0$ is in $\operatorname{im} \partial$.

$$\mathbb{Q}\widetilde{FG_n} \xrightarrow{\alpha} (\mathbb{Q}FG_n)^n \xrightarrow{\beta} \mathbb{Q}FG_n$$

conj. classes

T?