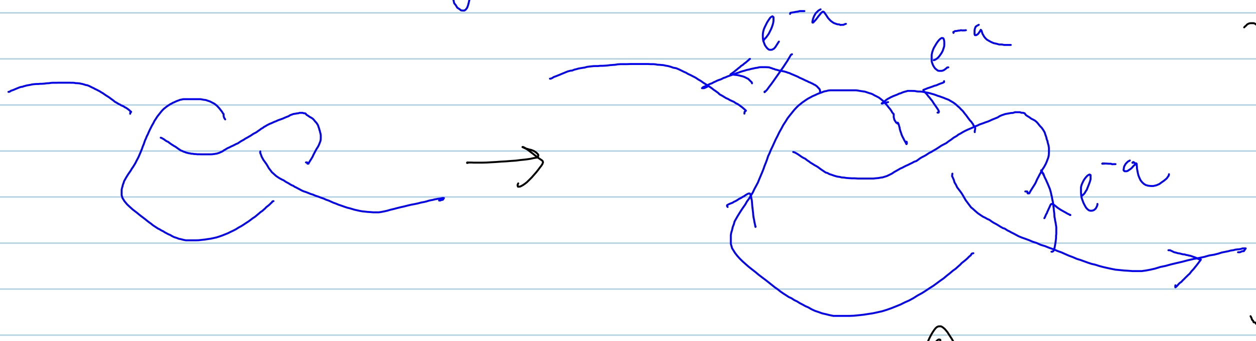
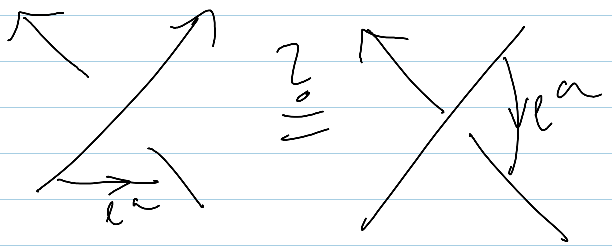
will anybody do Section 3.6 (The relation w/ Lie algebras) in my absence next week?

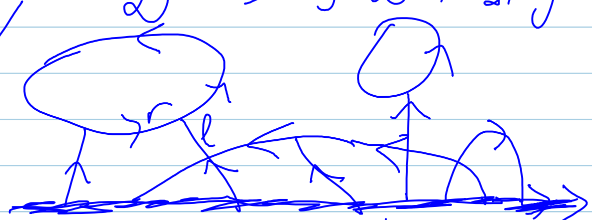
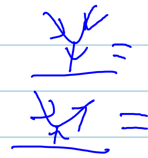


} on board 1



very easy to state, but is it easy to compute?

$\mathcal{D}^{wt}$ = "Jacobi diagrams"

$\mathcal{A}^{wt} = \Big\langle$  $\Big\rangle \Big/$ $\overrightarrow{STU}_1$,  $=$; $\overrightarrow{STU}_2$ $=$; $TC = \overrightarrow{STU}_3$ $0 =$ } on board 2

* connected to skeleton
* 2-in 1-out, l-r marked

$\overrightarrow{AS}$: $\overrightarrow{IHX}$:

only get trees, wheels, and "trees on wheels".

Thm 3.15 ("Bracket rise") The obvious inclusion $\iota: \mathcal{D}^w \to \mathcal{D}^{wt}$ descends to an isomorphism $\bar{\iota}: \mathcal{A}^w \to \mathcal{A}^{wt}$; Furthermore, $\overrightarrow{AS}$ and $\overrightarrow{IHX}$ hold in $\mathcal{A}^{wt}$.

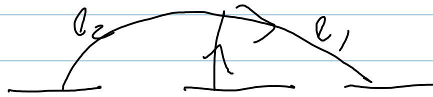
Thm 3.16. $\mathcal{A}^w(\uparrow)$ is the bi-algebra of polynomials in $D_L = ..$ $D_R = ...$ & $w_k =$  w/

deg D_L = deg $D_R = 1$, deg $w_k = k$, subject only to $w_1 = D_L - D_R$.

Semi-proof. Show only that D_L, D_R, w_k generate.

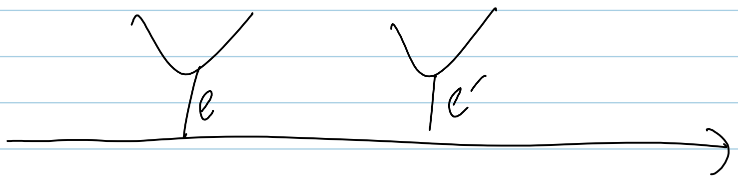
Cor. $$\sum t^n \dim A_n^w = \frac{1}{1-t} \prod_{k=1}^{\infty} \frac{1}{1-t^k}$$

Proof of 3.15 [similar to the u case]

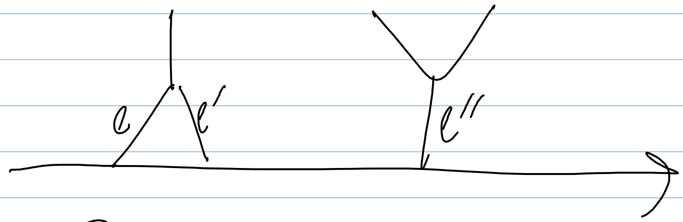
* $\tau: A^w \to A^w$ is well-def - use 

* τ is surjective. . . . . .
* We need to show that the "elimination procedure is indep of the order of elimination.
* only one internal vertex.
* Now use induction on # of int. verts; assume e & e' are edges that connect an internal vertex to the skeleton. We need to show that $el_e = el_{e'}$

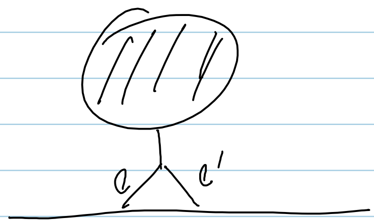
Case I



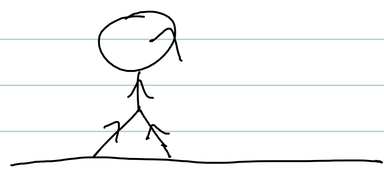
Case II



Case III



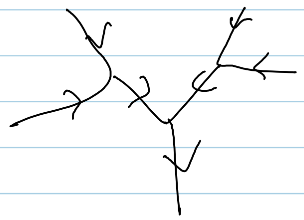
must be



* Now prove $\overrightarrow{AS}$ & $\overrightarrow{IHX}$

A comment on $\mathcal{L}^w$, PBW, & thm 3.16.

Thm 3.18 $\mathcal{A}^w(\bigcirc) = \langle D_L = D_R \rangle$

Exercise 3.20 "CC"  $= 0$ in $\mathcal{A}^w(\uparrow)$

Exercise "detached wheels" & "hairy Y's" make sense in $\mathcal{A}^w(\uparrow)$: