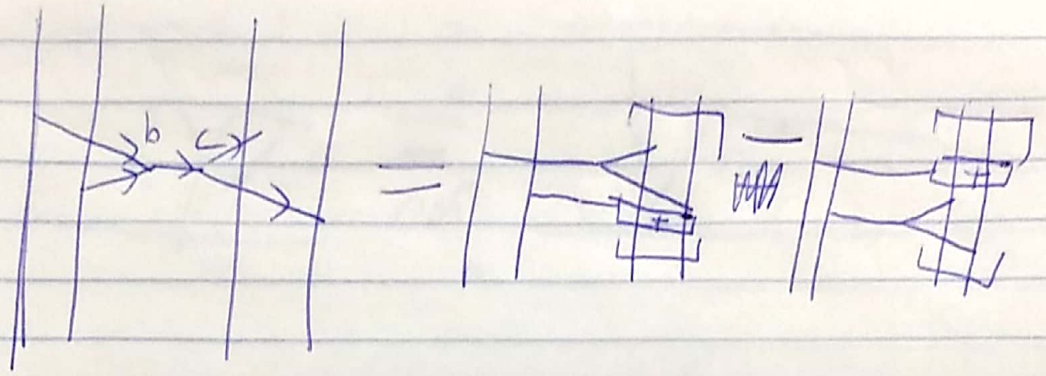
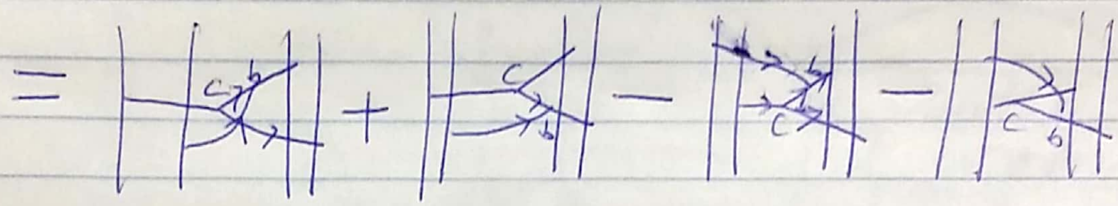
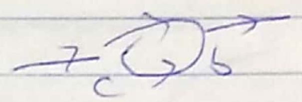
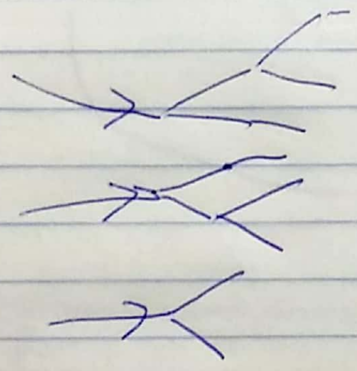
180106-1





"In $\mathcal{A}^{v,nc}$, can bring all c vertices to before all b vertices" (nc: no cycles)





"$\tilde{\mathcal{P}}^{v,nc}$" is spanned by double-"Forrest pairings" ($\tilde{\mathcal{P}}$: like $\mathcal{P}$, but unsymmetrized logs)

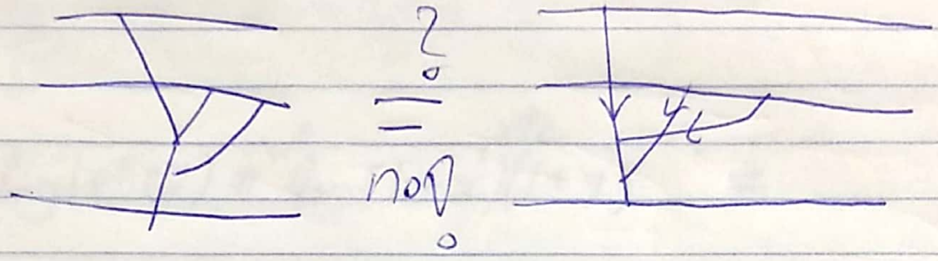
So

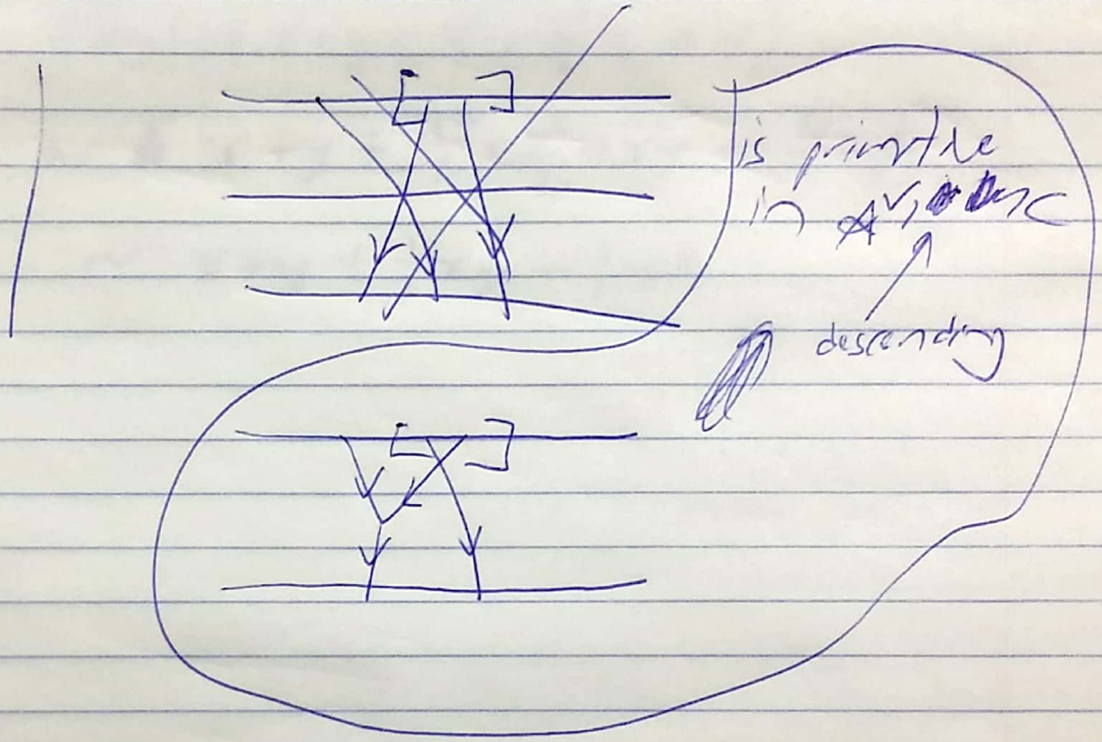
$\Delta_x \Delta_y \overline{xy}$

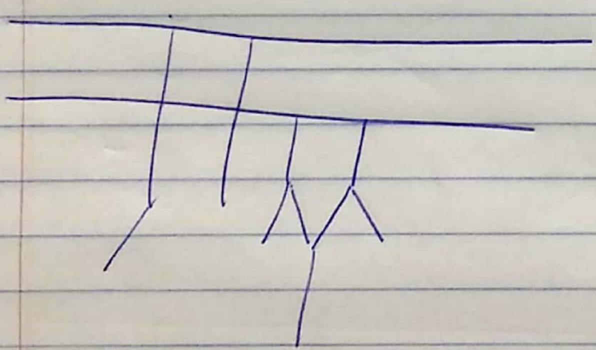
$$\Delta_x \Delta_y \log e^{\overline{xy}} = \log \Delta_x \Delta_y e^{\overline{xy}} = \log \Delta_x e^{\overline{xy_1}} e^{\overline{xy_2}}$$

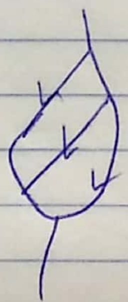
$$= \log e^{x_1 y_1} e^{x_2 y_1} e^{x_1 y_2} e^{x_2 y_2}$$

180106-2









Refined BCH: What's $\log e^{x\to z} e^{y\to z}$ in $A^{v,nc}(x*y*z)$?

Is it of z-degree 1?

16/06-3

$$\underset{f}{\log 1+z} \to \underset{f'}{\frac{1}{1+z}} \to \underset{f''}{-\frac{1}{(1+z)^2}} \to \underset{f'''}{\frac{2}{(1+z)^3}} \to$$

$$\log 1+z = z - \frac{z^2}{2} + \frac{z^3}{3} - \frac{z^4}{4} + \ldots$$

$$\log(e^x e^y) \sim \log(1+x+\tfrac{x^2}{2})(1+y+\tfrac{y^2}{2}) \sim$$

$$\sim \log(1+x+y+\frac{x^2}{2}+\frac{y^2}{2}+xy)$$

$$\sim x+y+\frac{x^2}{2}+\frac{y^2}{2}+xy-\frac{(x+y)^2}{2}$$

$$\sim x+y+\frac{1}{2}xy-\frac{1}{2}yx \ldots$$