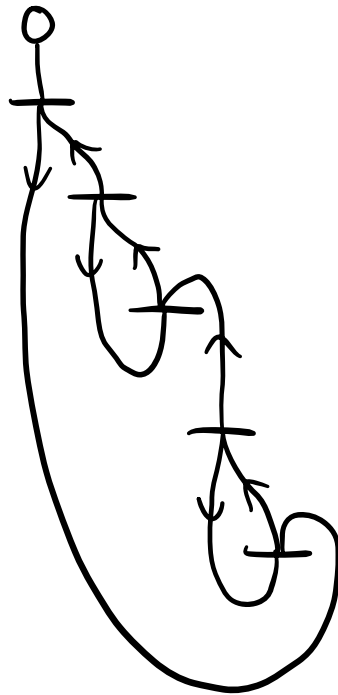
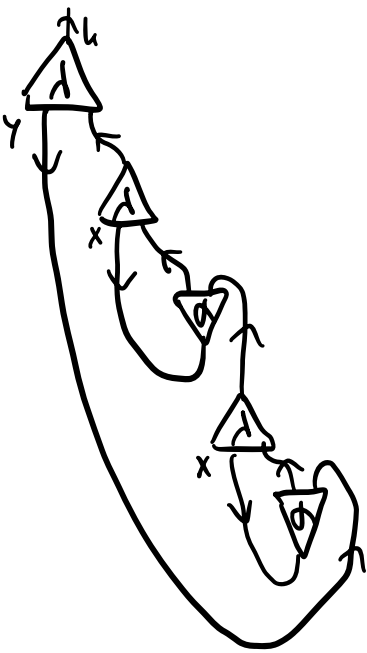


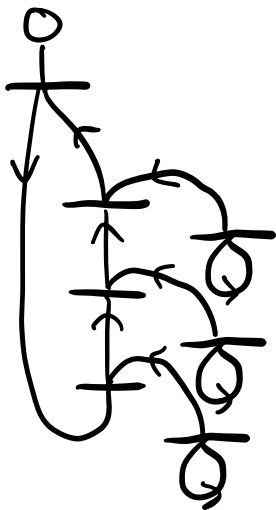
$$(f \Leftarrow a)_u = \begin{array}{c} \uparrow \\ \text{---} \\ \uparrow \downarrow \\ \text{---} \\ \uparrow \\ f \end{array} \quad (x \Rightarrow b)_u = \begin{array}{c} \uparrow \\ \text{---} \\ \uparrow \downarrow \\ \text{---} \\ \uparrow \\ x \end{array} \quad \uparrow \text{ red} \quad \downarrow \text{ blue ?}$$

$$\text{sup } xy = \begin{array}{c} \uparrow \\ \text{---} \\ \uparrow \downarrow \\ \text{---} \\ \uparrow \end{array} \quad \text{dup } xy = \begin{array}{c} \uparrow \downarrow \\ \text{---} \\ \uparrow \downarrow \\ \text{---} \\ \uparrow \downarrow \end{array} \quad - / = \text{ or } \cdot / \circ ?$$

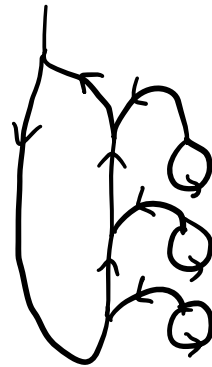
$$y \Rightarrow x \Rightarrow (x \Leftarrow (x \Rightarrow x \Leftarrow y))$$



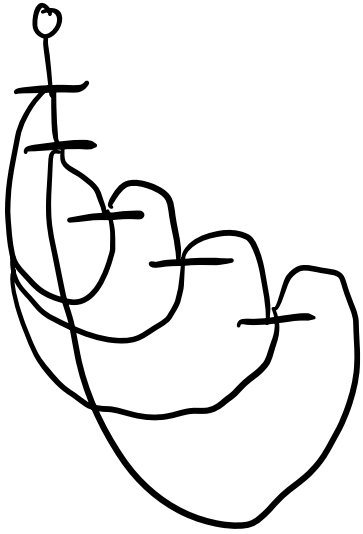
$$x \Rightarrow x \Leftarrow i \Leftarrow i \Leftarrow -i$$



No lines?




$$S \Rightarrow Z \Rightarrow S \leftarrow (S \leftarrow (S \leftarrow Z))$$



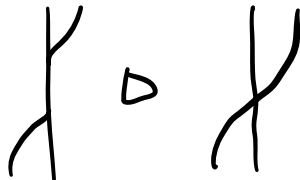
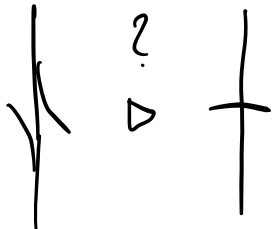
or maybe

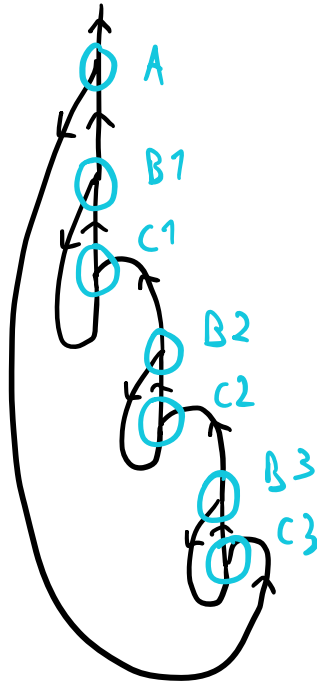
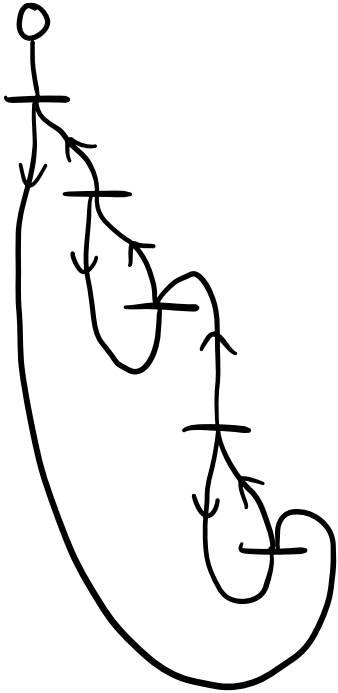
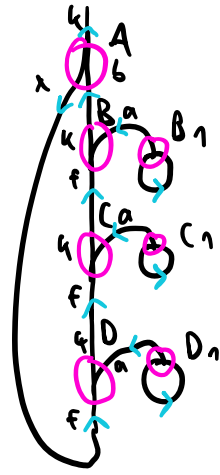
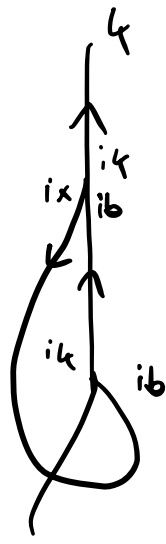
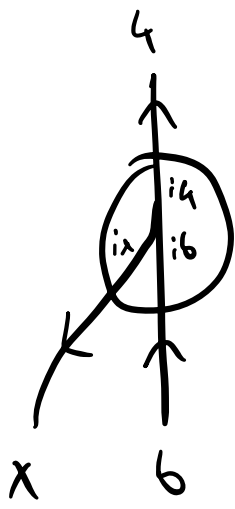
$$(x \Rightarrow b)_u = \begin{array}{c} u \\ \uparrow \\ x \quad b \end{array}$$

$$(f \leftarrow a)_u = \begin{array}{c} u \\ \uparrow \quad \leftarrow a \\ f \end{array} \quad \text{or} \quad \begin{array}{c} \uparrow \\ \uparrow \end{array} ?!$$

dup 

flipped





Bruijn

$$x \Rightarrow x$$

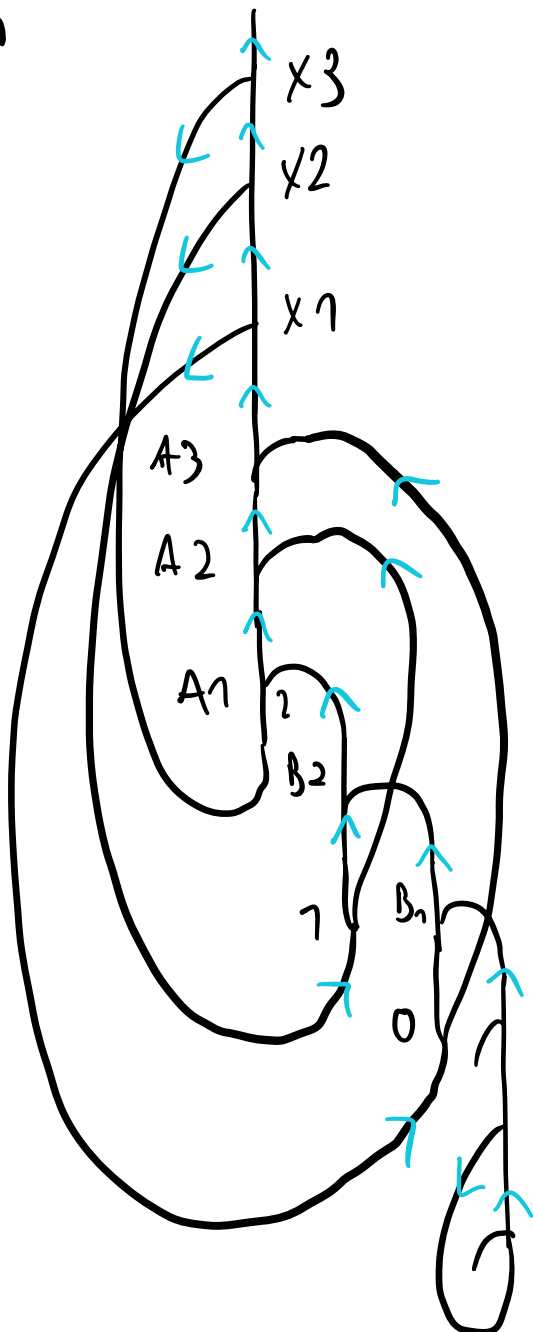
$$x \Rightarrow _ \Rightarrow x$$

$$x \Rightarrow _ \Rightarrow _ \Rightarrow _ \Rightarrow x$$



$$\lambda \lambda \lambda ((2 (1 (0 \lambda \lambda \lambda 1))) 1) 0) \cong \langle 2 \rangle$$

Wads worth

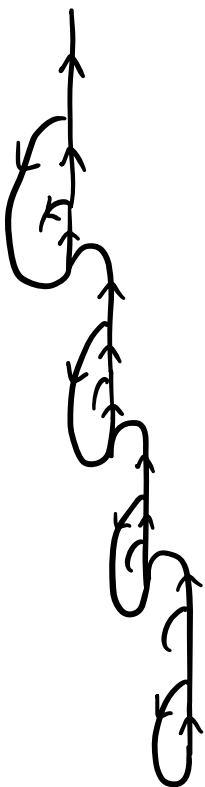


Scott

$d d 0$



$d d (\neg d d (\neg d d (\neg d d 0)))$

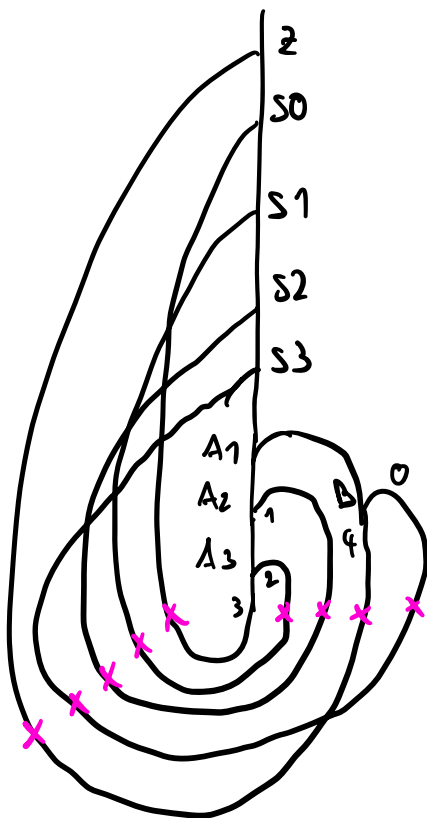


Woods with #2

$A d (\neg 0)$

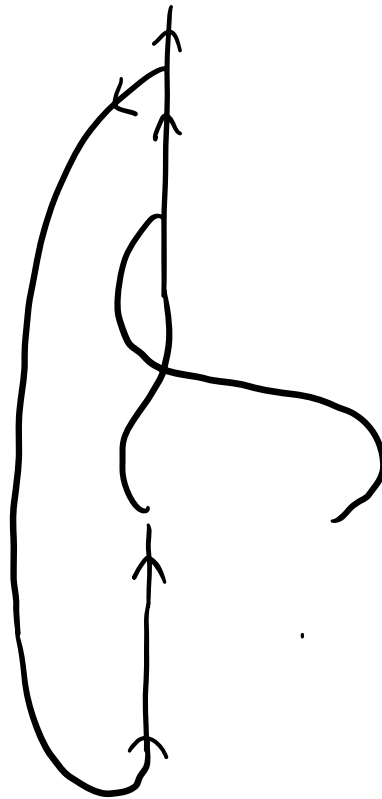
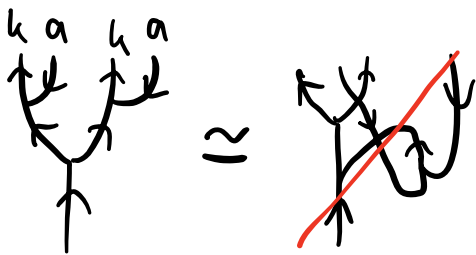
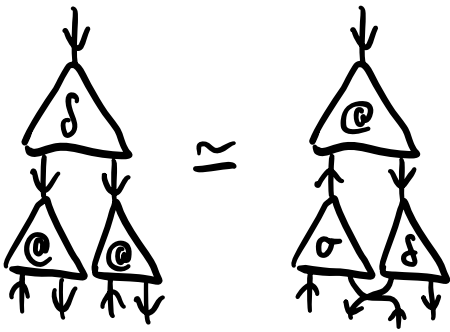
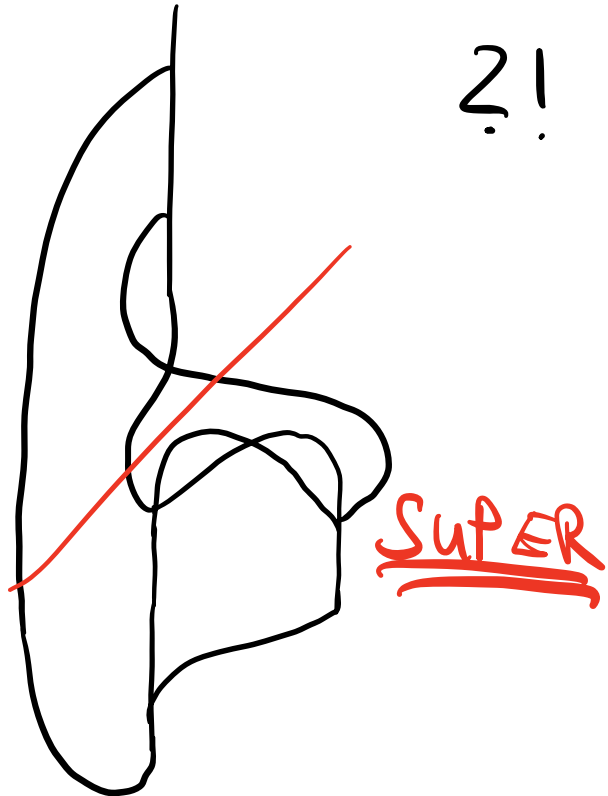
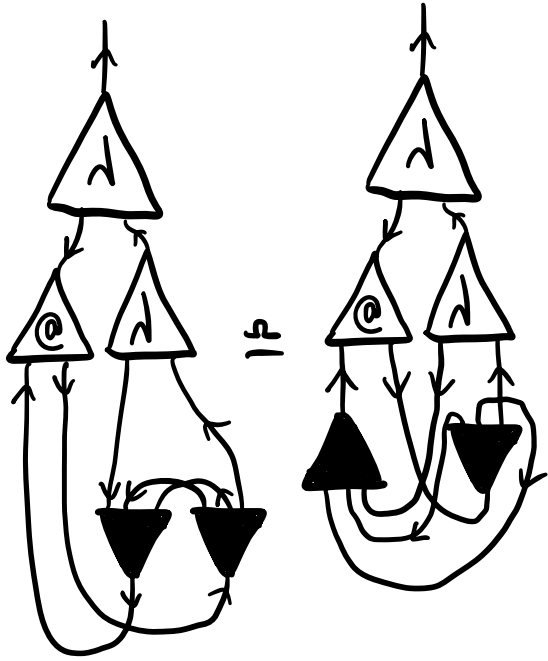


$d d d d d (((3 2) \neg) (4 0)))$



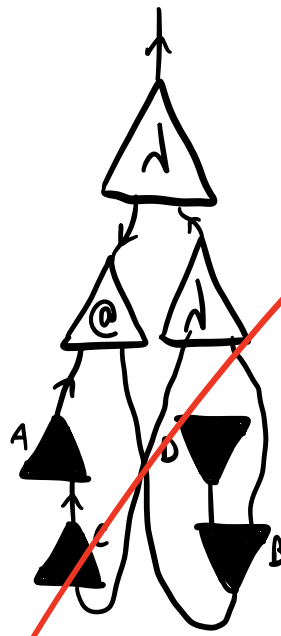
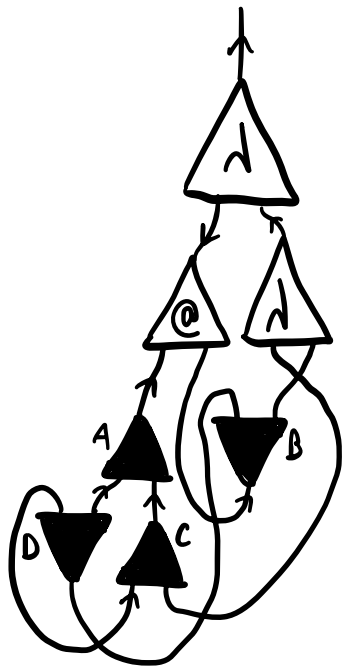
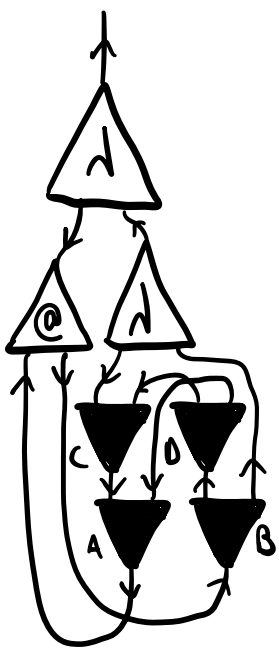
Appendix 2?

Church 3

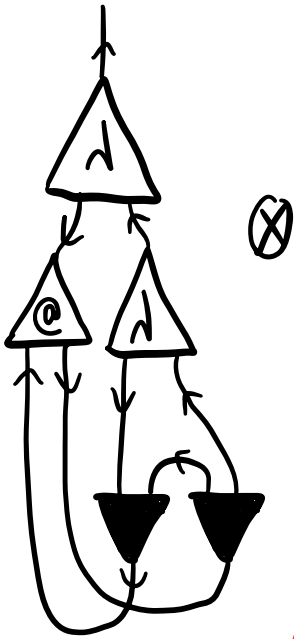


dup 

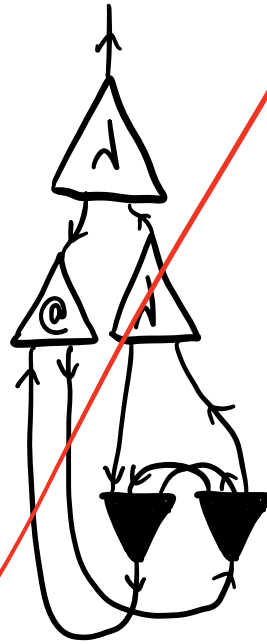
sup 



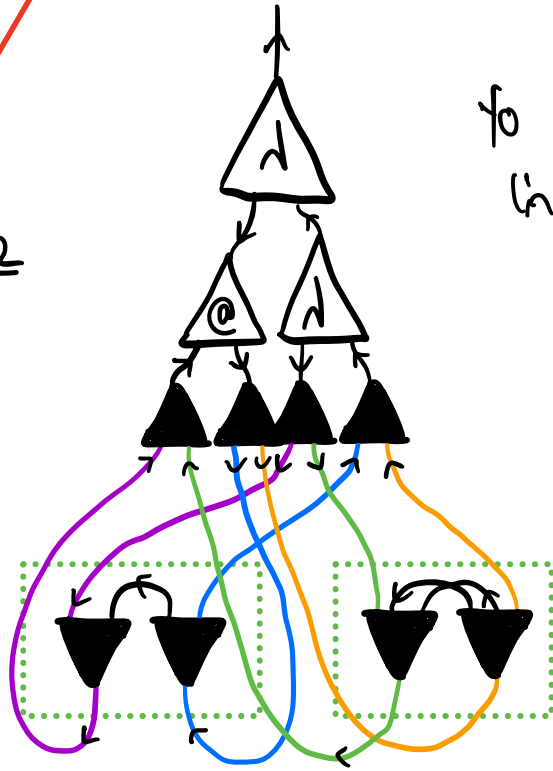
?



⊗



≈



to lines?