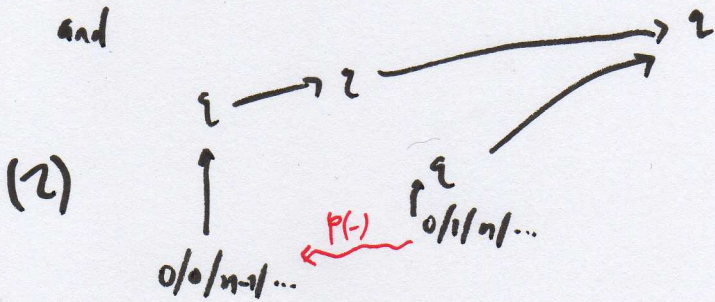
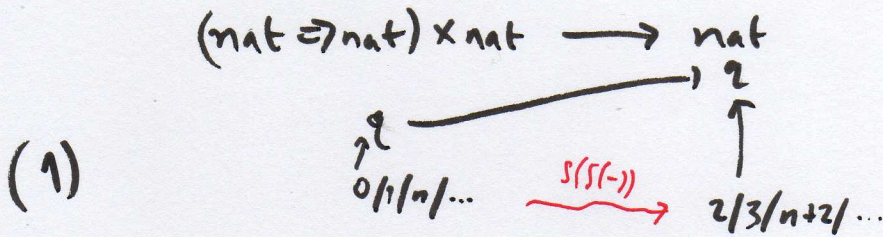


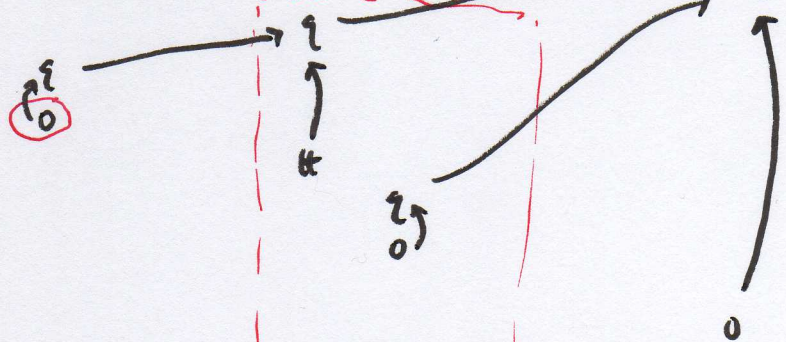
• \mathcal{D}_1 : start with $f: \text{nat} \rightarrow \text{nat}, x: \text{nat} \vdash S(S(f(Px))) : \text{nat}$



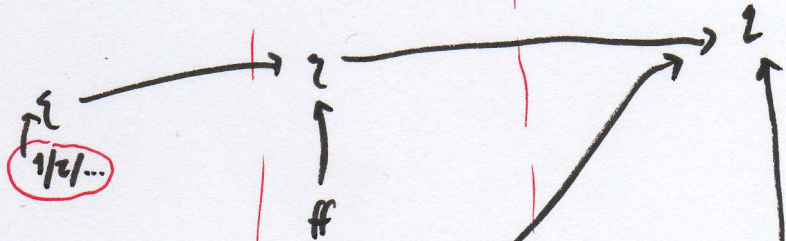
now let's do $f: \text{nat} \rightarrow \text{nat}, x: \text{nat} \vdash \text{if } (\text{zero? } x) \text{ then } 0 \text{ else } S(S(f(Px))) : \text{nat}$

$(\text{nat} \Rightarrow \text{nat}) \times \text{nat} \xrightarrow{\langle \text{zero? } x, 0, S(S(f(Px))) \rangle} \text{bool} \times \text{nat} \times \text{nat} \xrightarrow{\text{if}} \text{nat}$

if 0 plays 'zero'

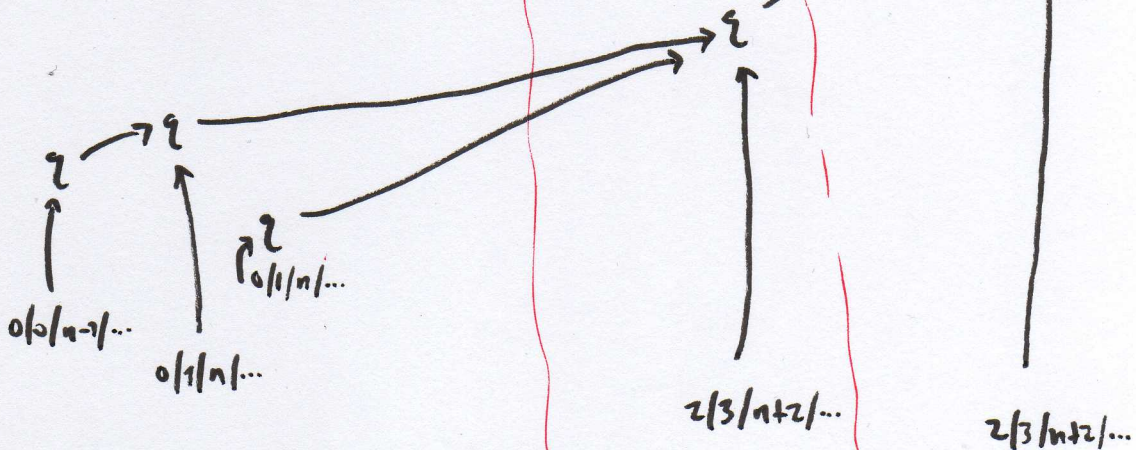


but if 0 plays 'non-zero'

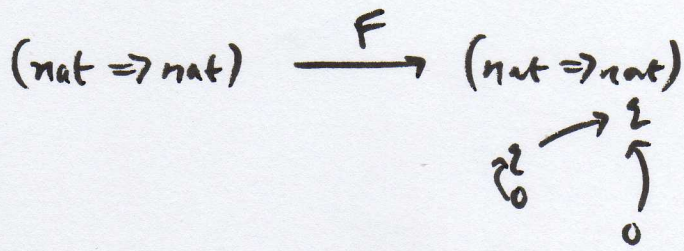


(2) above

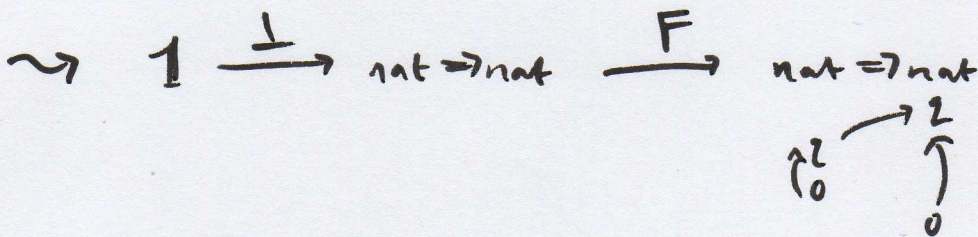
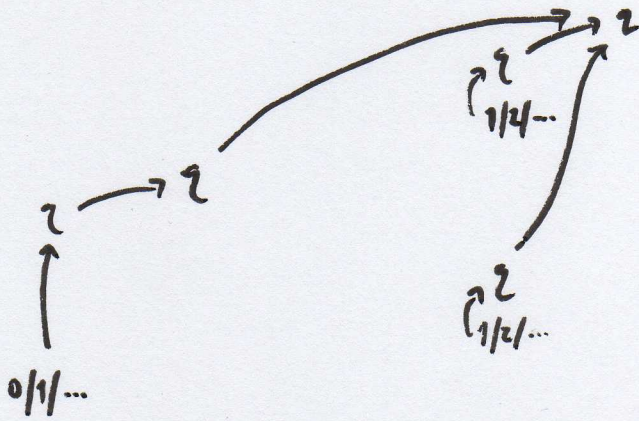
(1)



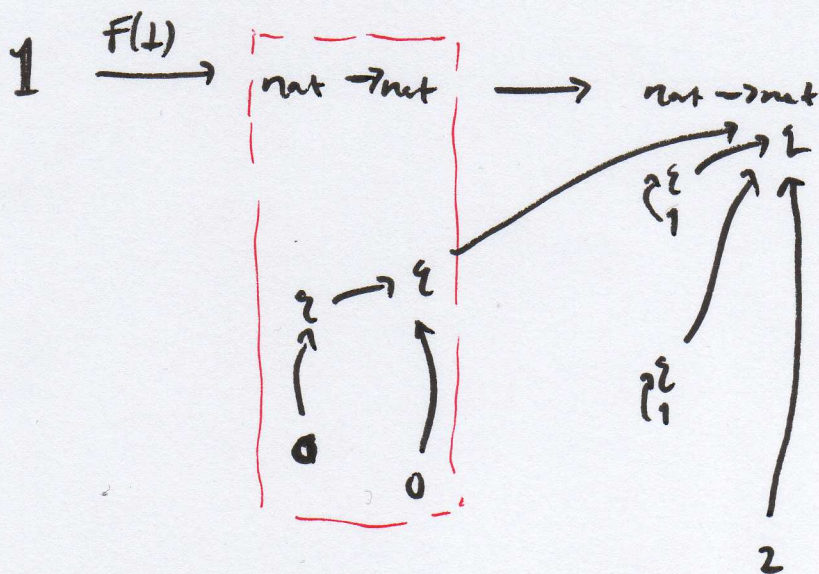
So $f: \text{nat} \rightarrow \text{nat} \vdash \lambda x (-) : \text{nat} \rightarrow \text{nat} \stackrel{\Delta}{=} F$



and



and that's all



etc. to calculate $(\text{fixpt } \lambda f (D_1)) : \text{nat} \rightarrow \text{nat}$

