3. Si consideri il seguente albero, dove $\rightarrow$ rappresenta la SOS a piccoli passi e $\overset{*}{\rightarrow}$ la sua chiusura transitiva.

$$\dfrac{\dfrac{}{(f(3),s)\underset{r}{\rightarrow}\underbrace{(\langle[]+\textbf{int}\ x;\leftrightarrow 3\div x=x+2;,x\rangle,s[3/l_2])}_{\texttt{conf}_0}}\ r(f)=(\textbf{int}\ x;,x=x+2;,x)}{(f(3),s)\overset{*}{\underset{r}{\rightarrow}}(5,s)}\qquad \dfrac{\dfrac{\texttt{conf}_0\overset{*}{\underset{r}{\rightarrow}}(5,s)}{\texttt{conf}_0\overset{*}{\underset{r}{\rightarrow}}\underbrace{(\langle[l_1/x]\div x=x+2;,x\rangle,s[3/l_2])}_{\texttt{conf}_1}}\ \texttt{cond}_1}{\texttt{conf}_0\overset{*}{\underset{r}{\rightarrow}}(5,s)}\qquad T_3$$

dove T_3 è l'albero

$$\dfrac{\dfrac{\dfrac{\dfrac{\dfrac{}{\texttt{conf}_1\underset{r}{\rightarrow}\underbrace{(\langle[l_1/x]\div x=3+2;,x\rangle,s[3/l_2])}_{\texttt{conf}_2}}\ \texttt{cond}_1}{(x=x+2;,s[3/l_2])\underset{r_1}{\rightarrow}(x=3+2;,s[3/l_2])}}{(x=x+2,s[3/l_2])\underset{r_1}{\rightarrow}(x=3+2,s[3/l_2])}}{(x,s[3/l_2])\underset{r_1}{\rightarrow}(3,s[3/l_2])}\ s[3/l_2](r_1(x))=3}{\texttt{conf}_1\overset{*}{\underset{r}{\rightarrow}}(5,s)}$$

$$\dfrac{\dfrac{\dfrac{\dfrac{\texttt{conf}_2\overset{*}{\underset{r}{\rightarrow}}(5,s)}{\texttt{conf}_2\underset{r}{\rightarrow}\underbrace{(\langle[l_1/x]\div x=5;,x\rangle,s[3/l_2])}_{\texttt{conf}_3}}\ \texttt{cond}_1}{(x=3+2;,s[3/l_2])\underset{r_1}{\rightarrow}(x=5;,s[3/l_2])}}{(x=3+2,s[3/l_2])\underset{r_1}{\rightarrow}(x=5,s[3/l_2])}}{(3+2,s[3/l_2])\underset{r_1}{\rightarrow}(5,s[5/l_2])}\ \textbf{3 + 2 =5}$$

$$\dfrac{\dfrac{\dfrac{\texttt{conf}_3\overset{*}{\underset{r}{\rightarrow}}(5,s[5/l_2])}{\texttt{conf}_3\underset{r}{\rightarrow}(\langle[l_1/x]\div x\rangle,s[5/l_2])}\ \texttt{cond}_1}{(x=5;,s[3/l_2])\underset{r_1}{\rightarrow}(\lambda,s[5/l_2])}}{(x=5,s[3/l_2])\underset{r_1}{\rightarrow}(5,s[5/l_2])}\qquad \dfrac{(\langle[l_1/x]\div x\rangle,s[5/l_2])\overset{*}{\underset{r}{\rightarrow}}(5,s)}{(\langle[l_1/x]\div x\rangle,s[5/l_2])\underset{r}{\rightarrow}(5,s)}\ \texttt{cond}_1}{T}$$

Indicando l'isomorfismo fra $\texttt{Loc}$ e $L_{\texttt{Loc}}(\textbf{LW})$ con $\texttt{sem2sin} : \texttt{Loc} \rightarrow L_{\texttt{Loc}}(\textbf{LW})$ e $\texttt{sin2sem} : L_{\texttt{Loc}}(\textbf{LW}) \rightarrow \texttt{Loc}$,
affinché l'albero sia corretto bisogna sostituire:

$\texttt{cond}_1$ con

Y	$l_2 = \texttt{sin2sem}(l_1) \wedge \texttt{Nuova}(l_2, r, s)$
N	$l_2 = \texttt{sem2sin}(l_1) \wedge \texttt{Nuova}(l_2, r, s)$
N	$l_1 = \texttt{sin2sem}(l_2) \wedge \texttt{Nuova}(l_2, r, s)$
Y	$l_1 = \texttt{sem2sin}(l_2) \wedge \texttt{Nuova}(l_2, r, s)$
N	$l_1 = l_2 \wedge \texttt{Nuova}(l_2, r, s)$
N	$\texttt{Nuova}(l_2, r, s)$

r_1 con

N	$r[rl]$
N	$r[l_1/x]$
Y	$r[l_2/x]$
Y	$r[\texttt{sin2sem}(l_1)/x]$
N	$r[\texttt{sem2sin}(l_2)/x]$
N	r

T con

Y	$\dfrac{(x,s[5/l_2])\underset{r_1}{\rightarrow}(5,s[5/l_2])}{}$
N	$\dfrac{(x,s[5/l_2])\underset{r_1}{\rightarrow}(5,s)}{}$
Y	$\dfrac{(x,s[5/l_2])_{r[l_2/x]}\overrightarrow{\ }(5,s[5/l_2])}{}$