

$$\begin{array}{c}
[x : A]^x \\
\vdots \\
\frac{N : B}{\lambda x. N : A \rightarrow B} \quad (\rightarrow \text{I}^x) \quad \begin{array}{c} \vdots \\ M : A \end{array} \\
\hline
(\lambda x. N) M : B \quad (\rightarrow \text{E})
\end{array}
\Rightarrow
\begin{array}{c}
\vdots \\
M : A \\
\vdots \\
N\{M/x\} : B
\end{array}$$

$$\begin{array}{c}
\vdots \quad \vdots \\
\frac{M : A \quad N : B}{(M, N) : A \& B} \quad (\&\text{I}) \\
\hline
\text{fst } (M, N) : A \quad (\&\text{E}_l)
\end{array}
\Rightarrow
\begin{array}{c}
\vdots \\
M : A
\end{array}$$