

$$\begin{array}{c}
\langle \{\}, \{\}, id, \{[a][b]X \approx_{\textcolor{teal}{?}} [b][a]X\} \rangle \\
(\approx_{\textcolor{teal}{?}} [\mathbf{ab}]) \\
\langle \{\}, \{\}, id, \{[b]X \approx_{\textcolor{teal}{?}} [b](ab).X, a \#_{\textcolor{teal}{?}} [a]X\} \rangle \\
(\approx_{\textcolor{teal}{?}} [\mathbf{aa}]) \\
\langle \{\}, \{\}, id, \{X \approx_{\textcolor{teal}{?}} (ab).X, a \#_{\textcolor{teal}{?}} [a]X\} \rangle \\
(\approx_{\textcolor{teal}{?}} \mathbf{inv}) \\
\langle \{\}, \{\}, id, \{a \#_{\textcolor{teal}{?}} [a]X, (ab).X \approx_{\textcolor{teal}{?}} X\} \rangle \\
(\#_{\textcolor{teal}{?}} \mathbf{a[a]}) \\
\langle \{\}, \{\}, id, \{(ab).X \approx_{\textcolor{teal}{?}} X\} \rangle \\
(\top)
\end{array}$$