

$$\begin{array}{ccccc}
La & \xrightarrow{Lf^{-1}} & Lb & \xleftarrow{Lg^{-1}} & Lc \\
\uparrow Lf & & \uparrow \text{id} & & \uparrow \text{id} \\
Lb & \xrightarrow{\text{id}} & Lb & \xleftarrow{Lg^{-1}} & Lc \\
\downarrow Lg & & \downarrow Lg & & \downarrow \text{id} \\
Lc & \xrightarrow{\text{id}} & Lc & \xleftarrow{\text{id}} & Lc
\end{array}$$