

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