

$$\begin{array}{ccccc}
 & & A \times B & & \\
 & \swarrow f \circ \pi_1 & \downarrow u & \searrow g \circ \pi_2 & \\
 A' & \xleftarrow{\pi'_1} & A' \times B' & \xrightarrow{\pi'_2} & B'
 \end{array}$$