

$$\begin{array}{ccccc}
 A & \xrightarrow{\quad f \quad} & B & \xrightarrow{\quad g \quad} & C \\
 \downarrow F & & \downarrow F & & \downarrow F \\
 FA & \xrightarrow{\quad Ff \quad} & FB & \xrightarrow{\quad Fg \quad} & FC
 \end{array}$$