

$$\begin{array}{ccc}
 \cdot & \xrightarrow{f} & \cdot \\
 g \downarrow & \searrow \varphi & \downarrow g' \\
 \cdot & \xrightarrow{f'} & \cdot
 \end{array}$$

$$\begin{array}{ccccc}
 \ker f \cap \ker g & \hookrightarrow & \ker f & \twoheadrightarrow & \ker f' \\
 \downarrow & & \downarrow & & \parallel \\
 \ker g & \hookrightarrow & \ker \varphi & \twoheadrightarrow & \ker f' \\
 \downarrow & & \downarrow & & \\
 \ker g' & \xlongequal{\quad} & \ker g' & &
 \end{array}$$