

$$\begin{array}{ccccc}
 X & \xrightarrow{a} & Y & \xrightarrow{b} & Z \\
 \parallel & & \downarrow \varphi & & \parallel \\
 X & \xrightarrow{a'} & Y' & \xrightarrow{b'} & Z
 \end{array}$$

A commutative diagram illustrating a mapping between two sequences of objects and morphisms. The top row consists of objects X , Y , and Z connected by morphisms a and b . The bottom row consists of objects X , Y' , and Z connected by morphisms a' and b' . A vertical arrow labeled φ points from Y to Y' , and a tilde symbol (\sim) is placed to the left of this arrow. Vertical double lines connect X to X and Z to Z , indicating that these objects are identified or mapped to themselves.