

$$\begin{array}{ccccc}
 & & & & X \\
 & & & & \downarrow \text{---} \\
 & & & & P \\
 M & \xrightarrow{i} & C & \xleftarrow{\quad} \twoheadrightarrow & \text{cok}(i) \\
 \parallel & & \downarrow & & \downarrow \\
 M & \longrightarrow & M_C & \xleftarrow{\quad} \twoheadrightarrow & M_B
 \end{array}$$

Commutative diagram illustrating a mapping between modules and their quotient/cokernel structures. The top row shows the map  $i: M \rightarrow C$  and its cokernel  $\text{cok}(i)$ . The bottom row shows the map  $M \rightarrow M_C$  and its quotient  $M_B$ . The vertical arrows indicate the quotient maps  $C \rightarrow M_C$  and  $\text{cok}(i) \rightarrow M_B$ . The dashed arrows represent the induced maps between the quotient structures:  $X \rightarrow P$ ,  $X \rightarrow M_C$ , and  $P \rightarrow M_B$ .