

$$\begin{array}{ccc}
C_n(X) & \xrightarrow{\partial_n} & C_{n-1}(X) \\
C_n(f) \downarrow & & \downarrow C_{n-1}(f) \\
C_n(Y) & \xrightarrow{\partial_n} & C_{n-1}(Y)
\end{array}$$