C. Localization of abelian groups

M = abelian group
$X, Y, \ldots, A, B, \ldots$ = abelian groups

☆ a) X is $0-M$ local (or M-null):

$$0 = Ext^*(M,X) = \begin{cases} \hom(M,X) & * = 0 \\ Ext(M,X) & * = 1 \end{cases}$$

☆ b) $A \to B$ is a local equivalence:

$$\forall \text{ local } X, \quad \hom(A,X) \xleftarrow{\sim} \hom(B,X)$$

(strong local equivalence: $\forall$ local X

$$Ext^*(A,X) \xleftarrow{\sim} Ext^*(B,X)$$

)

☆ c) $X \xrightarrow{i} LX = L_M X$ is $0-M$ localization.

1) LX is local
2) i is a local equivalence