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Math 644

HW 1

1 Given a (left) R -module show:

- i. The covariant functor $\text{Hom}_R(M, -)$ is a left-exact functor.

Proof. Let $0 \rightarrow A \xrightarrow{f} B \xrightarrow{g} C \rightarrow 0$ be a short exact sequence. Application of the functor gives a complex

□

- ii. This functor is right-exact iff M is a projective R -module.