$$
\begin{array}{ccccccc}
K \otimes R^K & \longrightarrow & R^n \otimes R^K & \longrightarrow & M \otimes R^K & \longrightarrow & 0 \\
\big\downarrow & & \big\downarrow{\simeq} & & \big\downarrow{\simeq} & & \\
0 \longrightarrow K^K & \longrightarrow & R^{n \times K} & \longrightarrow & M^K & \longrightarrow & 0
\end{array}
$$