Commutative Diagrams for Lirong's Talk

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$$
\begin{array}{ccc}
A & \xrightarrow{\ q\ } & A/E \\
 & {\scriptstyle \forall}\searrow & \big\downarrow {\scriptstyle \exists!} \\
 & & x
\end{array}
$$

$$
\begin{array}{ccc}
A & \xrightarrow{\ q\ } & \overline{A} \\
 & {\scriptstyle \forall}\searrow & \big\downarrow {\scriptstyle \exists!} \\
 & & X
\end{array}
$$

$$
\begin{array}{ccc}
M \times N & \longrightarrow & M \otimes_R N \\
 & {\scriptstyle \forall}\searrow & \big\downarrow {\scriptstyle \exists!} \\
 & & L
\end{array}
$$

$$
\begin{array}{ccc}
M \times N & \longrightarrow & R^{M\times N} \longrightarrow R^{M\times N}/K = M \otimes_R N \\
 & {\scriptstyle \forall}\searrow \big\downarrow & \\
 & L & \xleftarrow{\ \ \exists!\ \ }
\end{array}
$$