

MATH 101: GRADUATE LINEAR ALGEBRA
DAILY HOMEWORK #4

Problem 3.1. Let V, W be finite-dimensional vector spaces over F . Let $\text{ev}_V: V \xrightarrow{\sim} V^{**}$ be the evaluation isomorphism on V and similarly ev_W on W . Let $\phi: V \rightarrow W$ be F -linear, and let $\phi^{**} = (\phi^*)^*$. Show that the following diagram commutes:

$$\begin{array}{ccc} V & \xrightarrow{\phi} & W \\ \text{ev}_V \downarrow & & \downarrow \text{ev}_W \\ V^{**} & \xrightarrow{\phi^{**}} & W^{**} \end{array}$$