

**MATH 101: ALGEBRA I
WORKSHEET, DAY #7**

Problem JV7.A. Let F be a field, let V be an F -vector space, and let $W \subseteq V$ be an F -subspace. Show that $(V/W)^* \simeq \text{ann}(W)$.

Problem JV7.B. Let F be a field and let V, W be F -vector spaces. [Try not to assume that V, W are finite-dimensional.] Let $\phi \in \text{Hom}_F(V, W)$. Show that $\text{img}(\phi^*) = \text{ann}(\ker \phi)$.