Plan for 02/10.

Presentation 1  
Section 9.1.

Presentation 2  
Section 9.3.

Presentation 3  
Section 9.2. (If there is time.)

Exercise 1  
Let $X$ be a normed space and $X'$ be its dual space. Let $Y \subseteq X$ be a subspace. We define the annihilator $Y^\perp$ of $Y$ as 

$$ Y^\perp = \{ l \in X' : l \text{ vanishes on } Y \}. $$

Show that $Y^\perp$ is a closed subspace of $X'$.

Exercise 2  
Let $X$ be a normed space, $X'$ be its dual space, and $Y \subseteq X$ be a closed subspace. Show that the annihilator $Y^\perp$ is isometrically isomorphic to the dual of $X/Y$.

Exercise 3  
Let $X$ be a normed space, $X'$ be its dual space, let $Y \subseteq X$ be a subspace, and let $Y'$ be the dual of $Y$. Show that $Y'$ is isometrically isomorphic to $X'/Y^\perp$. 