201B Real Analysis
Assignment 5

1. Let $X = (V, \| \cdot \|)$ be a normed space with $\dim(V) = N < \infty$. Prove that $X' = X^*$ (every linear functional on a finite dimensional space is continuous). Calculate $\dim(X^*)$.

2. Let $X = (V, \|\cdot\|)$ be a normed space. Prove that $\phi \mapsto I(\phi)$ gives a bijection between X^* and closed hyperplanes not containing 0_V.

3. B-3 # 5, 8, 13.