MATH 175: ELEMENTARY FUNCTIONAL ANALYSIS (WINTER 2019)

Homework 2: due Thursday 5pm, Jan. 24

- Section 3.3: 3.1, 3.9.
- Section 4.5: 4.7, 4.9, 4.10.

Additional problems:

(1) Let X be a Hilbert space and F be a closed subspace of X. Show that if $F \neq X$, then $F^{\perp} \neq \{0\}$.

(2) Let X be a Hilbert space. Let M, N be non-empty subset of X and $M \subset N$. Prove
   (a) $N^{\perp} \subset M^{\perp}$
   (b) $M^{\perp} = (\overline{M})^{\perp}$