We did a similar problem. See P. 54. #9

B.1. (a) Show that $\rho(x, A) = \inf_{a \in A} \rho(x, a)$ is continuous function. $\underline{\underline{A \in M}}$ (M: set of all bounded infinite sequences of real numbers. Page 41. ex 9.)

(b) the same question but prove it for Topological Space.

B.2. ~~Show that~~ Show that M is not separable.

~~B.~~ B.3. P.55, Problem 11.(a) only. We did this a few weeks ago, but I did not understand (a. A), (a B.). Why did you start saying $f_n \to f$, uniform convergence, etc? Is there a different way to prove this problem? What is t'?

B.4. Show that $C_{[a,b]}$ is complete.

B.5. $\left.\begin{array}{l} X \text{ is compact} \\ f \text{ is continuous} \end{array}\right\} \Longrightarrow f(x)$ is closed. ← prove.

~~B.6. Page 108. See the Example 1.~~
~~Show that the all the functionals, from F_1 to F_8,~~
~~are continuous or discontinuous.~~
~~(See P.114 Problem 1, 2.~~

B.6. #5. (We did this). Here is some proof from my professor for #5. Could you figure this out and
P.128 prove by his way? I didn't see his method clearly.

(pf) $y_1, \cdots, y_n$ are linear independent in L.

$y = \alpha_1 y_1 + \cdots + \alpha_n y_n \quad (y \in L)$, $x = \beta_1 x_1 + \cdots + \beta_k x_k \quad (x \in L_1)$.

$x_1 = \alpha_1 y_1 + \cdots + \alpha_n y_n \quad (\alpha_1 \neq 0) \Rightarrow y_1 = \frac{1}{\alpha}(x_1 - \cdots\cdots) \Rightarrow x_1, y_2, \cdots, y_n$

$x_2 = \alpha_1' x_1 + \alpha_2' y_2 + \cdots + \alpha_n' y_n \quad (\alpha_2' \neq 0)$.

$x_1, x_2, x_3, \cdots, x_k, y_{k+1}, \cdots, y_n$.

$\Rightarrow [y_{k+1}], \cdots [y_n]$ is a basis in L/L_1