Read Chapter 7

(1) An infinite set with the cofinite topology is compact.

(2) Let $X$ be a compact space and $f : X \to \mathbb{R}$ be continuous. Show that $f$ assumes its supremum, i.e. $s = \sup_{x \in X}(f(x)) < \infty$ and there is an $x_0 \in X$ so that $f(x_0) = s$.

(3) 3/page 95.

(4) 10/ page 95

(5) (*) Show that if $X$ and $Y$ are compact spaces that $X \times Y$ (with the product topology) is also compact.

(6) (*) Let $\mathcal{M}$ be the Michael line.
   (a) Show that if a set $A \subset \mathcal{M}$ is $\mathcal{M}$-closed. Then $A \cap \mathbb{Q}$ is closed in $\mathbb{Q}$ with respect to the restriction topology of the usual topology on $\mathbb{R}$.
   (b) Show that $\mathcal{M}$ is normal.