

Compactness.

- Reminds: Heine-Borel theorem
- Definition: Compact set in a metric space
 - Through sequences
 - Through open covering
 - Through ε -net.

• Examples: in \mathbb{R}^n , l^p

- Properties
 - Closed subsets
 - Closeness
 - Boundedness
 - Heine-Borel

• Compact sets in l^p .

• Arzela - Ascoli

• Topology - general definitions.

• Strong convergence, weak convergence

$$\bullet \quad x_n \xrightarrow{w} x \implies \|x\| \leq \underline{\lim} \|x_n\|.$$