

Chapter 4 Function Spaces

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In these exercises, $C^0 = C^0([a, b], \mathbb{R})$ is the space of continuous real-valued functions defined on the closed interval $[a, b]$. It is equipped with the sup norm, $\|f\| = \sup\{|f(x)| : x \in [a, b]\}$.

Problem 1

Let M, N be metric spaces.

Part a

Formulate the concepts of pointwise convergence and uniform convergence for sequences of functions $f_n : M \rightarrow N$.