Functional Analysis

Ashton Cole

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COMMON VECTOR SPACES IN FUNCTIONAL ANALYSIS
FINITE DIMENSIONAL
countable, finite cardinality
SEQUENCE SPACES
countably infinite
FUNCTION SPACES
uncountably infinite

Symbol	Name	Definition	Topology	Complete	Metrizable	Dual
$L^p(\Omega)$ $1 \leq p < \infty$	Lebesgue Space	$\{[f] \in \mathbb{F}^\Omega : \|f\|_{L^p(\Omega)} < \infty\}$	norm-induced: $\|f\|_{L^p(\Omega)} = \int_\Omega f(x)\,\mathrm{d}x$	Yes	Yes	$L^q(\Omega)$