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8. Analysis

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Two real functions associated with convolutions of measures

Let M denote the set of Borel measures on an infinite compact abelian group. For $\mu \in M$, the *indexfunction* is defined by $I(\mu, p) = \sup\{q \geq p \mid \mu * L^p \subseteq L^q\}$ where $p \in [1, \infty)$. For a fixed $p \in [1, \infty)$, the *measurefunction* $I(\cdot, p)$ is defined on M by $I(\mu, \cdot)$. Real-variable properties and examples of these two functions are discussed.