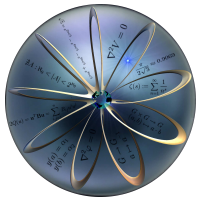

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existence of Laplace transform

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Theorem 1. *For every measurable function $f\colon [0,\infty) \to \mathbb{C}$, if there exists a real number t_0 such that*

$$\int_0^\infty e^{-st_0}|f(s)|\,ds$$

converges, then the Laplace transform $\mathcal{L}(f)$ is a well-defined function from $\{t \in \mathbb{C} \mid \Re t > t_0\}$ to $\mathbb{C}$. Furthermore, the Laplace transform function is analytic.