Let $\{X_t, t \geq 0\}$ be a collection of i.i.d. random variables such that $X_t \sim \mathrm{N}(0, t)$. Then, $\{X_t, t \geq 0\}$ is a stochastic process which can be shown by Kolmogorov's theorem. Then it holds that $\varphi_{X_t}(s) = \varphi_{W_t}(s)$ for each $s \in \mathbb{R}$, where $\{W_t, t \geq 0\}$ is a Wiener process. Since the Wiener process is a Lévy process the characteristic function $\varphi_{X_t}(s)$ coincides with the characteristic function of a Lévy process and has the Lévy-Khintchine representation. The process $\{X_t, t \geq 0\}$ is not a Lévy process, since it is not stochastically continuous. Thus it is necessary to show that the sum of two Lévy processes is a Lévy process for the solution of Exercise 2 on Sheet 11.