E19.1 [1NN] Note:*Exercise 1, written exam, June 30th, 2017.*

Let f be a continuous function on the interval $[0, 1]$. Prove that the function

$$F(t) = \int_0^1 f(x)e^{tx} \, dx$$

is analytic on $\mathbb{R}$.

Solution 1. [1NP]