

Problem 34

Let f satisfy $f(t+T) = f(t)$ for all $t \geq 0$ and for some fixed positive number T ; f is said to be periodic with period T on $0 \leq t < \infty$. Show that

$$\mathcal{L}\{f(t)\} = \frac{\int_0^T e^{-st} f(t) dt}{1 - e^{-sT}}.$$