Quiz 5

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$$f(t) = \begin{cases} t & \text{if } 0 < t < 1 \\ 1 & \text{if } t > 1 \end{cases}$$

Solution:

$$= \int_0^1 te^{-st}\,dt + \int_1^t e^{-st}\,dt$$

LHS integral:

$$= \int_0^1 te^{-st}\,dt = -\frac{te^{-st}}{s} + \int_0^1 \frac{e^{-st}}{s}\,dt$$
$$= \left(-\frac{t}{se^{st}} - \frac{1}{s^2e^{st}}\right)$$