

Exercise 16

In Exercises 13–16, show that the given function $u(x)$ is a solution of the corresponding Volterra integro-differential equation:

$$u''(x) = 1 - xe^{-x} - \int_0^x tu(t) dt, \quad u(0) = 1, \quad u'(0) = -1, \quad u(x) = e^{-x}$$