

AQ. Find the solution y to the boundary value problem

$$\begin{cases} y'' = x^2, & x \in (0, 1), \\ y(0) = 0 = y(1), \end{cases}$$

using the associated **Green's function**

$$G(x, s) = \begin{cases} s(x-1), & 0 \leq s \leq x, \\ x(s-1), & x \leq s \leq 1. \end{cases}$$

RQ. Solve the Volterra equation

$$u(x) = 1 + \int_0^x (x-t)u(t)dt, \quad (\text{a})$$

by finding the solution of the equivalent ODE.

“The capacity to learn is a gift; the ability to learn is a skill; the willingness to learn is a choice.” — Brian Herbert.