

Exercise 2

For each of the following integro-differential equations, classify as Fredholm, Volterra, or Volterra-Fredholm integro-equation

$$u''(x) = x + \int_0^1 (1 + x - t)u(t) dt, \quad u(0) = 1, \quad u'(0) = 0$$

Solution

This is a Fredholm integro-differential equation because both limits of integration are constant.