Exercise 5

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

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

Solution

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