



3. $y(x) + \lambda \int_a^x (x-t)^2 y(t) dt = f(x).$

Solution:

$$y(x) = f(x) - \int_a^x R(x-t)f(t) dt,$$

where

$$R(x) = \frac{2}{3}ke^{-2kx} - \frac{2}{3}ke^{kx} \left[\cos(\sqrt{3}kx) - \sqrt{3} \sin(\sqrt{3}kx) \right], \quad k = \left(\frac{1}{4}\lambda\right)^{1/3}.$$

Reference

Polyanin, A. D. and Manzhirov, A. V., *Handbook of Integral Equations*, CRC Press, Boca Raton, 1998.