



$$12. \quad y(x) + \int_a^b e^{\lambda|x-t|} f(t, y(t)) dt = g(x), \quad a \leq x \leq b.$$

The solution of this integral equation is determined by the solution of the second-order ordinary differential equation

$$y''_{xx} + 2\lambda f(x, y) - \lambda^2 y = g''_{xx}(x) - \lambda^2 g(x)$$

under the boundary conditions

$$\varphi'_x(a) + \lambda\varphi(a) = 0, \quad \varphi'_x(b) - \lambda\varphi(b) = 0; \quad \varphi(x) = y(x) - g(x).$$

Reference

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