

9.
$$y(x) + \int_a^b e^{\lambda(x-t)} f(t,y(t)) dt = g(x)$$
.

A solution: $y(x) = \beta e^{\lambda x} + g(x)$, where λ is determined by the algebraic (or transcendental) equation

$$\beta + F(\beta) = 0, \qquad F(\beta) = \int_a^b e^{-\lambda t} f\left(t, \, \beta e^{\lambda t} + g(t)\right) dt.$$

Reference

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

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