



9. $y(x) + A \int_a^x [e^{\lambda(x-t)} - 1] y(t) dt = f(x).$

1°. Solution for $D \equiv \lambda(\lambda - 4A) > 0$:

$$y(x) = f(x) - \frac{2A\lambda}{\sqrt{D}} \int_a^x R(x-t)f(t) dt, \quad R(x) = \exp\left(\frac{1}{2}\lambda x\right) \sinh\left(\frac{1}{2}\sqrt{D} x\right).$$

2°. Solution for $D \equiv \lambda(\lambda - 4A) < 0$:

$$y(x) = f(x) - \frac{2A\lambda}{\sqrt{|D|}} \int_a^x R(x-t)f(t) dt, \quad R(x) = \exp\left(\frac{1}{2}\lambda x\right) \sin\left(\frac{1}{2}\sqrt{|D|} x\right).$$

3°. Solution for $\lambda = 4A$:

$$y(x) = f(x) - 4A^2 \int_a^x (x-t) \exp[2A(x-t)] f(t) dt.$$

Reference

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