



1. $\int_0^x y(t)y(x-t) dt = (Ax + B)e^{\lambda x}, \quad A, B > 0.$

Solutions:

$$y(x) = \pm\sqrt{B} e^{\lambda x} \left[\frac{1}{\sqrt{\pi x}} \exp\left(-\frac{A}{B}x\right) + \sqrt{\frac{A}{B}} \operatorname{erf}\left(\sqrt{\frac{A}{B}}x\right) \right],$$

where $\operatorname{erf} z = \frac{2}{\sqrt{\pi}} \int_0^z \exp(-t^2) dt$ is the error function.

Reference

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