

3.
$$\int_0^x y(t)y(x-t) dt = A^2 \cos(\lambda x).$$

Solutions:

$$y(x) = \pm \frac{A}{\sqrt{\pi}} \frac{d}{dx} \int_0^x \frac{J_0(\lambda t) dt}{\sqrt{x - t}},$$

where $J_0(z)$ is the Bessel function.

Reference

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

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