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

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.

