



12. $y(x) - \lambda \int_{-\infty}^{\infty} \frac{\sin(x-t)}{x-t} y(t) dt = f(x).$

Solution:

$$y(x) = f(x) + \frac{\lambda}{\sqrt{2\pi} - \pi\lambda} \int_{-\infty}^{\infty} \frac{\sin(x-t)}{x-t} f(t) dt, \quad \lambda \neq \sqrt{2/\pi}.$$

References

- Gakhov, F. D. and Cherskii, Yu. I.**, *Equations of Convolution Type* [in Russian], Nauka, Moscow, 1978.
Polyanin, A. D. and Manzhirov, A. V., *Handbook of Integral Equations*, CRC Press, Boca Raton, 1998.