

10.
$$y(x) - \lambda \int_0^\infty \cos(xt)y(t) dt = f(x)$$
.

Solution:

$$y(x) = \frac{f(x)}{1 - \frac{\pi}{2}\lambda^2} + \frac{\lambda}{1 - \frac{\pi}{2}\lambda^2} \int_0^\infty \cos(xt) f(t) \, dt, \qquad \lambda \neq \pm \sqrt{2/\pi}.$$

References

Krasnov, M. L., Kiselev, A. I., and Makarenko, G. I., Problems and Exercises in Integral Equations, Mir Publ., Moscow, 1971

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

Copyright © 2004 Andrei D. Polyanin

http://eqworld.ipmnet.ru/en/solutions/ie/ie0410.pdf