



Exact Solutions > Integral Equations > Linear Fredholm Integral Equations of the First Kind and Related Integral Equations with Constant Limits of Integration > Schlomilch Equation (Schlömilch Equation)

18. $\int_0^{\pi/2} y(\xi) dt = f(x), \quad \xi = x \sin t.$

Schlomilch (Schlömilch) equation.

Solution:

$$y(x) = \frac{2}{\pi} \left[f(0) + x \int_0^{\pi/2} f'_\xi(\xi) dt \right], \quad \xi = x \sin t.$$

References

Whittaker, E. T. and Watson, G. N., *A Course of Modern Analysis*, Cambridge Univ. Press, Cambridge, 1958.

Gakhov, F. D., *Boundary Value Problems* [in Russian], Nauka, Moscow, 1977.

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

Schlomilch Equation (Schlömilch Equation)