



15.  $\int_0^a \ln \left| \frac{x+t}{x-t} \right| y(t) dt = f(x).$

Solution:

$$y(x) = -\frac{2}{\pi^2} \frac{d}{dx} \int_x^a \frac{F(t) dt}{\sqrt{t^2 - x^2}}, \quad F(t) = \frac{d}{dt} \int_0^t \frac{sf(s) ds}{\sqrt{t^2 - s^2}}.$$

### References

- Zabreyko, P. P., Koshelev, A. I., et al.**, *Integral Equations: A Reference Text*, Noordhoff Int. Publ., Leyden, 1975.  
**Polyanin, A. D. and Manzhirov, A. V.**, *Handbook of Integral Equations*, CRC Press, Boca Raton, 1998.