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

Solution:

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

References

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