

37.
$$\int_{a}^{x} \sqrt{g(x) - g(t)} y(t) dt = f(x), \qquad f(a) = 0, \quad g'_{x}(x) > 0.$$

Solution:

$$y(x) = \frac{2}{\pi} g'_x(x) \left(\frac{1}{g'_x(x)} \frac{d}{dx} \right)^2 \int_a^x \frac{f(t)g'_t(t) dt}{\sqrt{g(x) - g(t)}}.$$

Reference

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

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