

1.
$$\int_a^x (x-t)y(t) dt = f(x), \qquad f(a) = f'_x(a) = 0.$$

Solution: $y(x) = f_{xx}''(x)$.

Reference

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

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http://eqworld.ipmnet.ru/en/solutions/ie/ie0101.pdf