

28.
$$y_{xx}'' + (ae^x - b)y = 0$$
.

Solution:

$$y = C_1 J_{2\sqrt{b}} (2\sqrt{a} e^{x/2}) + C_2 Y_{2\sqrt{b}} (2\sqrt{a} e^{x/2}),$$

where C_1 and C_2 are arbitrary constants, $J_{\nu}(z)$ and $Y_{\nu}(z)$ are the Bessel functions.

Reference

Polyanin, A. D. and Zaitsev, V. F., *Handbook of Exact Solutions for Ordinary Differential Equations, 2nd Edition,* Chapman & Hall/CRC, Boca Raton, 2003.

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