



4. $y''_{xx} + ay'_x + (bx + c)y = 0$.

1°. Solution with $b \neq 0$:

$$y = \exp\left(-\frac{1}{2}ax\right) \sqrt{\xi} \left[C_1 J_{1/3}\left(\frac{2}{3}\sqrt{b}\xi^{3/2}\right) + C_2 Y_{1/3}\left(\frac{2}{3}\sqrt{b}\xi^{3/2}\right) \right], \quad \xi = x + \frac{4c - a^2}{4b},$$

where $J_{1/3}(z)$ and $Y_{1/3}(z)$ are the Bessel functions, C_1 and C_2 are arbitrary constants.

2°. For $b = 0$, see equation 2.3.

Referenc

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