

47.
$$fy_{xx}^{\prime\prime} - af_x^{\prime}y_x^{\prime} - bf^{2a+1}y = 0$$
, $f = f(x)$.

Solution:

$$y = C_1 e^u + C_2 e^{-u}, \quad u = \sqrt{b} \int f^a dx,$$

where C_1 and C_2 are arbitrary constants.

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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