



47. $f y''_{xx} - a f'_x y'_x - b f^{2a+1} y = 0, \quad f = f(x).$

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.