

48.
$$f^2y_{xx}'' + f(f_x' + a)y_x' + by = 0$$
, $f = f(x)$.

The substitution $\xi = \int f^{-1} dx$ leads to a constant coefficient linear equation: $y_{\xi\xi}'' + ay_{\xi}' + by = 0$.

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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http://eqworld.ipmnet.ru/en/solutions/ode/ode0248.pdf