



Exact Solutions > Ordinary Differential Equations > Second-Order Nonlinear Ordinary
Differential Equations > Second-Order Generalized Homogeneous Equation

10. $y''_{xx} = yx^{-2}f(x^n y^m)$.

Second-order generalized homogeneous equation. The transformation $z = x^n y^m$, $w = xy'_x/y$ leads to a first-order equation: $z(mw + n)w'_z = f(z) + w - w^2$.

Reference

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

Second-Order Generalized Homogeneous Equation

Copyright © 2004 Andrei D. Polyanin

<http://eqworld.ipmnet.ru/en/solutions/ode/ode0310.pdf>